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DIPPING into Mr. D'Israeli's new novel the other day, hight "Tancred," we stumbled over a proposition, by the author, for improving architecture in Britain's happy land, which is at once so novel, so startling, and so *reasonable*, that we should do wrong if we did not bring it prominently before our readers. He is discoursing upon London, and right pleasantly he does it: he points to its vastness as its most striking point, and says it is the illimitable feeling that gives it a special character. But he complains that, after all, London is not grand. "It possesses only one of the qualifications of a grand city—size; it wants the equally important one—beauty. It is the union of these two qualities that produced the grand cities—the Romes, the Babylons, the hundred portals of the Pharaohs—multitudes and magnificence—the millions influenced by art. Grand cities are unknown since the beautiful has ceased to be the principle of invention. Paris, of modern capitals, has aspired to this character; but if Paris be a beautiful city, it certainly is not a grand one. Its population is too limited, and, from the nature of their dwellings, they cover a comparatively small space. Constantinople is picturesque. Nature has furnished a sublime site, but it has little architectural splendour, and you reach the environs with a fatal facility." And then he comes back to the acknowledgment, that London overpowers us with its vastness! Place a forum or an acropolis in its centre, continues our author, and the effect of the metropolitan mass, which now has neither head nor heart (what has become of St. Paul's?) instead of being stupifying, would be ennobling. "Nothing more completely represents a nation than a public building. A member of Parliament only represents at the most the united constituencies; but the palace of the Sovereign, a national gallery, or a museum baptised with the name of the country—these are monuments to which all should be able to look up with pride, and which should exercise an elevating influence upon the spirit of the humblest. [Most true.] What is their influence in London? Let us not criticise what all condemn. But how remedy the evil? What is wanted in architecture, as in so many things, is—a man. Shall we find a refuge in a committee of taste?—escape from the mediocrity of one to the mediocrity of many? We only multiply our feebleness and aggravate our deficiencies. [True again.] But one suggestion might be made. [Now it's coming. Prepare for it, good reader, and don't be alarmed.] No profession in England has done its duty until it has furnished its victim. The pure administration of justice dates from the deposition of Macclesfield. Even our boasted navy never achieved a great victory until we shot an admiral. Suppose an architect were *hanged!* Terror has its inspiration, as well as competition!"

Well done Young England. This recipe for good architecture is really delightful. HANG AN ARCHITECT? What can be simpler or more likely to do good execution? There are several who deserve it, or at all events ought to be suspended, which sounds like the same thing. This would indeed be breaking the neck of the difficulty, and elevating the profession in right earnest. Mr. D'Israeli evidently observes how architects are being shouldered on either side, and thinks it high time that they were set up in a new *line*. They have been run down long enough; now, he says, they shall be run up. He knows that true artists have lofty ideas, and, moreover having employed one himself, has a notion that suspense is part of their destiny, and that they are better prepared by use for the fate he suggests for them, than the eels were in the old story.

It is perhaps wrong of us, however, to crack jokes on so grave a matter,—a matter affecting in two senses the heads of the profession. The question that first suggests itself is,—who has been marked down as the first victim?—for Mr. D'Israeli being in Parliament, there is really no knowing how soon the proposed remedy may be tried. Conscience will make some ask, "Is it I?" Should the House, in its great mercy, allow the profession to pick their own man by ballot, we would wager a new "set-square" that the choice would fall upon Barry; our accomplished friend (the trying circumstances under which we have considered him placed, will excuse the freedom), being most in the way of others at this moment. If Parliament should appeal to us for advice, we will save Mr. B. to finish his great work, give them two men for choice, and be satisfied with the execution of either of them.

Mr. D'Israeli's hanging, of course means hanging in chains, *in terrorem*, and the effect could not fail to be extraordinary. Architects would have their luckless fellow ever before their eyes: would think twice before completing their designs, and lay every first stone with fear and trembling. The Act, in old time, "for preventing diversity of opinion," is nothing as compared with D'Israeli's last desperate act, for the prevention of mediocrity in architecture.

Before preparing the bill, however, we would, in a small voice, bid our legislators inquire, if there be no unfavourable influences to which architects are sometimes subject; if they are never trammelled by legislative enactments, over-ruled by employers, harassed by committees, or cramped for want of money? Whether, in short, there are not some other delinquents who might be hung at the same time, with equal justice, to keep poor *Architecton* company? D'Israeli himself evidently thinks there are, and we must quote a bit more of the book to let him speak for himself. It says:—"Though London is vast, it is very monotonous. All those new districts that have sprung up within the last half century, the creatures of our commercial and colonial wealth—it is impossible to conceive anything more tame, more insipid, more uniform. Pancras is like Marylebone, Marylebone is like Paddington (not quite); all the streets resemble each other, you must read the names of the squares before you venture to knock at a door. This amount of building-capital ought to have produced a great city. What an opportunity for architecture suddenly summoned to furnish habitations for a population equal to that of the city of Bruxelles, and a population, too, of great wealth. Marylebone, alone, ought to have produced a revolution in our domestic architecture."—Mr. D. is scarcely aware how little architects had to do with it.—"It did nothing. It was built by Act of Parliament. Parliament prescribed even a façade. It is Parliament to whom we are indebted for your Gloucester-places, and Baker-streets, and Harley-streets, and Wimpole-streets, and all those flat, dull, spiritless streets, all resembling each other, like a large family of plain children, with Portland-place and Portland-square for their respectable parents. The influence of our parliamentary government upon the fine arts is a subject worth pursuing. The power that produced Baker-street as a model for street architecture in its celebrated Building Act, is the power that prevented Whitehall from being completed, and which sold to foreigners all the pictures which the King of England had collected to civilise his people."

Without meddling with the doctrine to be inferred from the last sentence, there is much truth in the paragraph, and we recommend it for consideration to both houses of Parliament.

A considerable improvement has been made in our street architecture since the birth of the Baker-streets, and the aspect of London is rapidly altering. The public buildings even now going on, will of themselves play no inconsiderable part in this. A few words as to the progress of some of these will not be out of place here.

The House of Lords is rapidly approaching completion, and will be ready for the peers when they re-assemble after the recess, according to promise. The general effect on entering is magnificent; such a blaze of gilding, carvings, and coloured decorations, is not to be elsewhere found in England. Lord Brougham said, the other day, what many will say hereafter:—"He had been paying a visit on that morning to the most magnificent building he thought he had ever seen, doing the greatest possible honour to the very skilful, learned, and ingenious architect, by whom such a splendid palace had been prepared for the reception of Parliament."

The quantity of carving in the house, and its general excellence, will puzzle those who have been taught to think there are no good carvers in our days. Every inch of the woodwork is marked by the tool, and the throne at the southern end (a centre and two wings, resplendent with gold and colours), and the strangers' gallery, reporters' gallery, and peers' entrance, opposite, are elaborate in the extreme.* In the canopy over the centre of the throne are niches, intended for the reception of statuettes of the patron saints of the

* The chair was not in its place when we visited the building. *The Observer* says—"It is of the finest mahogany, standing about seven feet in height; the whole is richly gilt, and is surmounted by an open Gothic crown of elegant workmanship, supported on either side by the lion and unicorn, bearing shields. Beneath the crown is a triangular foliated compartment, containing the Sovereign's monogram, 'V.I.R.' The cushioned back is composed of regal velvet of the finest pile, bordered with the arms of England. Surrounding the Royal arms are enamel ornaments in the Byzantine style, alternating with crystals of the purest water. In the openwork panels of the arms are heraldic lions, elegantly introduced amidst luxuriant foliage. The top of the arms of the throne is level, the ends being in an octagonal form, richly moulded. The upright supports, on which are carved pinnacles, rest upon lions couchant. The front of the seat has a moulding of rose leaves, below which is a space occupied by three rose-formed compartments, containing the badges of England, Ireland, and Scotland—the rose, the shamrock, and the thistle—in the centre of which is the monogram, 'V.I.R.;' beneath which is another moulding, decorated with rose-leaves. The chair of the Prince of Wales is about four feet in height, the back forming an oval, surrounded by a moulding of rose-leaves, and cushioned with velvet, richly embroidered with the badge of the Prince of Wales, girt with Gothic scroll-work. The arms are horizontal, and in the front form a half circle, placed with the outer edge against the legs, which also form a similar half-circle; in the centre is a circular ornament containing the letter 'W.' The whole is finely gilt. The chair for Prince Albert is of similar design, with the exception of the embroidery of the back, in which is introduced the arms of his Royal Highness. The table for the clerks of the house is made of stately English oak, and of a quadrangular form, with a panelled top, standing on decorated carved legs, which divide it into compartments, each capable of accommodating one individual. From these legs spring carved rails to the corresponding legs on the other side, dividing the area of the table into squares, intended to represent the ancient seals of Westminster. The chairs for the clerks are also of oak, about four feet in height, with square backs, moulded, and cushioned with embroidered velvet.

three kingdoms, and on the wall immediately above, appears Mr. Dyce's fresco of the Baptism of King Ethelbert. Five other arched compartments remain to be filled up by frescoes. These spaces are at present hung with crimson drapery, powdered with crowns and roses. Around the house, under canopies, between the windows, will be placed statues of all the barons who were instrumental in obtaining the Magna Charta. Artists have been named for the execution of these, and have been applied to for terms.

The soffit of the peeress' gallery, on either side of the house, forms a canopy over the third row of the peers' seats below, and is decorated with the armorial bearings of the various lord chancellors, from the foundation of that office up to the present time.

The brass railing of the gallery is of excellent design, and we should not omit mention of the beautiful brass gates by which the house is entered.

Plain glass at present fills the windows, and will continue to do so for some time to come. The architect has but just now succeeded, after several failures, in obtaining stained-glass to meet his wishes. A sort of standard window has, we believe, been fitted up, and the work will now probably be proceeded with.

The public hall, adjoining, is elaborately decorated, and has a flooring of encaustic tiles. When Mr. Barry last reported, which is now some time ago, there were 1,186 men engaged on the works.

Some account of the mode of heating adopted, will be found in another page.

The new hall and staircase of the British Museum will be opened to the public, it is expected, on Monday next, and workmen are busily occupied in clearing away the scaffolding from the portico, completing the flight of (twelve) steps up to it, gravelling the roadway in front, and finishing the painting inside. Polychromy has been called in to aid the interior effect of this part of the building, and with considerable success, too. The sunk panels are blue with a yellow star in each, the enrichments are variously coloured,—red and white predominating; and the stiles, beams, &c., are covered with frets, guilloche, and scrolls, in flat colours, for all of which precedents have been found in the museum collection. These decorations were executed by Messrs. Collman and Davis. The parapet of the stairs is of carved stone highly polished.

The exterior of the northern wing of the Board of Trade, Whitehall, is fast approaching completion. Report says, that a design to elevate the Horse Guards has been approved by the government. At the Carlton Club, a part of the new façade is up; and the Museum of Economic Geology, described last week, is shewing itself above ground. Mystery still shrouds the proposed addition to Buckingham Palace: rumour speaks of an alteration in the elevation, but we have no certain information concerning it. The public must pay their money before they see the sight; and, instead of commenting in time, with a view to obtain excellence, must be contented with abusing the result, when too late to amend, and sighing grumpily over lost opportunities. When Mr. D'Israeli's new act comes into operation, these things will be better ordered.

"Hang an architect," and all will come right.

PEMBROKE COLLEGE, OXFORD.—A new dining hall is about to be erected at this college according to designs by Mr. Hayward, architect, of Exeter. Mr. M. Arding, of London, is the contractor for the same works.

CHEMISTRY AS APPLIED TO CONSTRUCTION.*

BY PROFESSOR GRIFFITHS.

SULPHATE of lime is a native calcareous compound, presented in considerable abundance, and is of much importance to the architect and the builder; it occurs in various forms, the most common of these being familiarly known as "gypsum," "alabaster," and "plaster stone." Sulphate of lime is a compound of *sulphuric acid*, *lime*, and *water*, these substances being united or held together by a very powerful chemical affinity, and under all ordinary circumstances they manifest no tendency to separate during the lapse of ages; if, however, any variety of this substance be heated red-hot, the water is wholly expelled, whilst dry or anhydrous sulphate of lime remains, and if this be finely powdered and mixed with water, it will combine with the water, and "set" into a solid mass.

From the circumstance of the abundance of gypsum at Montmartre, near Paris, and its heating or calcination being carried on there to a very great extent, the chemically anhydrous sulphate of lime is familiarly known as "plaster of Paris;" its importance in decorative architecture is too well known to need comment. If the "gypsum" or "plaster stone," be heated to a degree beyond that which is simply requisite to expel the water, the resulting "plaster" loses the property of "setting" when mixed with water, because at a high temperature the sulphuric acid and the lime undergo a chemical change, by which a portion of *sulphuret of calcium* is formed. This is a direct union of *sulphur* with *calcium*, and is perfectly different in all its habitudes to the compound of *sulphuric acid* with *lime* or *oxide of calcium*.

"Plaster stone" is rendered anhydrous in two ways: these are technically called "burning" and "boiling;" the former is generally adopted if the plaster be intended for the use of the builder, the latter if for the use of the potter or figure-maker. The "burning" is conducted by heaping lumps of the "raw stone" with fuel; this is generally done at night, that the workmen may the more readily judge when the lumps become fairly red-hot, at which time they are sufficiently "burned," and are successively removed and afterwards ground to powder, which should be kept out of the contact of air and water with the greatest possible care, or it will soon become *hydrated*, and thus lose its property of "setting."

If the "stone" be overheated, parts of it will acquire a yellowish cast, and evolve a sulphureous odour from the formation of *sulphuret of calcium*, and if such carlessly burned plaster be employed, it will either set very imperfectly or cause the work to rise in blisters; a ton of "plaster stone" when well and properly burned generally loses from four to six cwt. of water.

The "boiling" is conducted by grinding the "raw stone" to a fine powder. This is placed in a long brick trough heated by a flue. The water immediately begins to evaporate, and its escape is promoted by constantly stirring the powder, and so abundantly does the water evaporate, that the whole bulk of the powder is agitated, as if it were boiling, hence the origin of the term by which the process is technically known.

If several pounds of good plaster of Paris be mixed with water, a very considerable degree of heat is evolved during the "setting," and this for the same reason as in "slaking" quick-lime, namely the water passing from the liquid to the solid state, and its latent heat thus becoming sensible heat; for the whole "setting" of the plaster depends upon the intense chemical affinity that exists between *anhydrous* sulphate of lime and water, by which the latter is solidified, and every work in plaster owes its hardness, its texture, its durability to such solidification of water.

"Alabaster" is another variety of native hydrated sulphate of lime; and when perfectly white, it may be regarded as chemically pure. Some specimens are beautifully veined, of a rich brown colour, by the presence of peroxide of iron; and common "plaster-stone" invariably contains this substance.

The native varieties of sulphate of lime, namely, "gypsum," "plaster-stone," and "alabaster," are not absolutely insoluble in water, and, therefore, cannot be advantageously employed for works exposed to the weather, for their finely-polished surfaces will very soon become dull and rough from the solvent power of the water that falls upon them; but for internal work, as it is well known, they are all most admirably fitted.

A very simple experiment will prove the solubility of pure white alabaster in water, thus:—dissolve a portion of white soap in strong spirit of wine, to form a clear transparent liquid, called, *tincture of soap*; pour a few drops of this into *distilled water*, and no white curdling will ensue. Place a piece of alabaster in distilled water for a few hours, then remove it, add the tincture of soap, and it will immediately curdle; thus proving that the water has abstracted or dissolved a portion of the alabaster.

Soap is perfectly soluble in pure or distilled water, hence no curdling ensues when added to it; on the other hand, if the water contain sulphate of lime, the soap is immediately decomposed; it is a compound of soda, and fatty or oily matter, and the *lime* immediately combines with such matter, forming an *insoluble* soap, or curd.

The tincture of soap is a very simple and accurate test of the relative purity of water; it is popularly known as "the well-diggers' test," for the *hardness* of spring water generally depends upon the presence of sulphate of lime, derived from the strata of the earth in which the springs originate, or throughout which they percolate.

The blue clay of London abounds with sulphate of lime, in the form of beautiful transparent crystals, known to the mineralogist as *selenite*, and hence most of the well-water of the metropolis is *hard*, and unfit for the purposes of washing.

The crystals of *selenite* consist of forty parts, by weight, of sulphuric acid, twenty-eight parts of lime, and eighteen parts of water; this is readily expelled by heat, and then the actual sulphate remains *anhydrous*, and devoid of regular form or *amorphous*.

Having devoted so large a space to the examination of lime and calcareous compounds, we must terminate here, and proceed to some other important materials employed in construction.

Clay is a most abundant natural production, and enters largely into the composition of many materials employed in architecture. There are many varieties of clay, and these are popularly named after the uses to which they are applied; thus, "brick-clay," "potters' clay," "porcelain clay," and "pipe-clay" are all in universal employment; but these, and other varieties, agree in the character or property of plasticity when mixed with water, and it is on this account that clay is so very valuable to the brick-maker and the potter. The property of plasticity of clay, let the variety of the substance be pure or common, is not destroyed by a large admixture of foreign substances; as, for example, finely powdered flint or finely divided sand; for, in fact, some of "the clay" (as it is called in the potteries) contains only one-fourth its weight of absolutely pure clay, oxide of aluminum or alumina, the remainder being silicious matter; and yet the mass, when mixed with water, or "tempered," admits of being kneaded and formed, either by "throwing or pressing," into various useful articles with the greatest facility.

If clay, or the above mixture, be exposed to a bright red heat, it becomes a solid mass of extreme hardness, and all plasticity is perfectly destroyed; and however finely burnt clay or pottery may be powdered, still it will no longer form a plastic mass when mingled with water.

When chemically examined or analysed, clay appears to be a mixture of pure alumina with several metallic oxides, and is therefore by no means uniform in composition, but every kind of clay contains alumina, or the pure oxide of aluminum in combination with water, and to the water the plasticity of the alumina is entirely referrible.

Clay is the only substance popularly called an earth that has the property of plasticity, hence it is the basis of every kind of earthenware, from common brick to refined porcelain, and "these two extremes include more of the comforts and elegancies of life than are to be found within the chemical range of any other substance."

Pure clay is known in the chemical labora-

* See p. 120, *ante*.

tory by the name of *alumine* or *alumina*, a name derived from *alum*, a well known substance that crystallizes in regular octohedra, and is a compound of *sulphuric acid*, *potash*, and *alumina*.

The curious fact of alumina being identical with that which confers plasticity upon clay, was known in the infancy of chemical science; it was called an earth, an argillaceous, non-alkaline earth, and resisted all attempts at decomposition or resolution into any other forms of matter. Barron entertained an opinion that alumina was of a *metallic* nature, and Lavoisier had sufficient penetration to state that it was a *metallic oxide* whose elements were held in union by an affinity too powerful for any known agent to overcome. Notwithstanding these surmises as to its nature, alumina was experimentally acknowledged to be a simple or elementary substance until the year 1808. Soon after Davy had decomposed the fixed alkalies, potash and soda, and proved them to be oxides of the metals potassium and sodium, and found that the power of potassium, or its affinity for oxygen, was superior to all other substances, he was induced to apply it to alumina, reasoning as follows:—If alumina be a compound in which oxygen exists, it is probable that the intense affinity of potassium for such element, will deprive alumina of *it*, and so elicit the *base*, be it what it may, of alumina. An appeal to experiment established the fact of alumina being a compound of oxygen and a peculiar substance apparently *metallic*, for which Davy proposed the name of *aluminum*, but he scarcely examined its properties on account of the extremely minute portions that he could obtain by his analysis. Many chemists refused to admit this view of the compound nature of alumina—refused, that is, to rank it with other metallic oxides; but all are now agreed about the matter, since Wohler's accurate analysis in 1828, when he succeeded in procuring the metal *aluminum* in tangible quantity, and found that upon causing it to exert affinity for oxygen, the sole product or compound was *alumina*. Thus from the evidence of analysis and synthesis, alumina is proved to be an oxide of the metal aluminum, and the original notions of Barron and Lavoisier are corroborated by actual experiment.

In the science of chemistry, the term *alumina* is of more convenient employment than that of *protoxide of aluminum*, which is the strict ultimate term, and it is likewise usual to denote all the oxides formerly called alkalies and earths except lime by the termination *a*; on the other hand, all metals of modern discovery are distinguished by the termination *um*; *vide* the list of elements.

The chemical properties of aluminum are of no practical utility in construction, but those of alumina are of the greatest possible interest and importance.

By the action of ammonia upon a solution of alum, the sulphuric acid, and the potassa of that salt are removed or withdrawn, whilst its pure alumina precipitates in the form of a perfectly white substance, and this when collected and dried at common temperatures retains about half its weight of water, it is therefore a hydrate of alumina. This will readily mix with more water, and form a plastic mass, but no solution of alumina takes place, and for all practical purposes it may be regarded as absolutely insoluble in water.

Some kinds of fine white clay, although containing an enormous per centage of alumina, are not chemically pure, and these, when breathed upon or wetted with water, emit a peculiar odour, like that of moist "Fuller's earth," or some varieties of stone employed for pavements; this odour is known by the name of *argillaceous*, and was supposed to be peculiar to pure alumina; recent researches prove, that pure alumina thus treated has no odour, but if a very minute portion of oxide of iron be present (as it always is in the very purest native specimens of clay), that the odour is immediately evolved, when breathed upon or moistened with water.

Artificially, pure alumina, and all natural specimens of clay containing it, retains water with great and persistent affinity. This can only be expelled at a bright red heat, and leaves the alumina *anhydrous*, but no longer plastic or miscible with water. In this anhydrous state the substance is excessively hard, therefore its fine powder is occasionally advantageously employed for grinding and polishing metal work. This affords a striking example of the physical or mechanical character of a substance being wholly altered by the abstraction of water.

Alumina is perfectly infusible, and hence its extreme value as a material for the manufacture of crucibles, and other vessels that are intended to withstand intense heat.

"Cornish clay" and "pipe-clay" each contain a very large per centage of pure alumina, and, accordingly, they are extremely refractory in the fire, but the presence of sand and lime renders them fusible. Many "clays" naturally contain the two last-named substances, and are, therefore, perfectly unfit for the manufacture of bricks.

All "clays" contain more or less of the oxide of iron; and to this substance their various shades of colour is chiefly referrible; and when a light yellow clay is heated red-hot, or, technically speaking, "burned," it assumes a bright red colour, on account of the iron assuming its highest degree of oxidation, or, in other words, becoming *peroxide* of iron.

"Burnt clay," being anhydrous, hard, and insoluble in water, forms an excellent material for the foundation of roads, &c., and is now most abundantly used in many operations of building and of civil engineering.

By selecting a white clay, and artificially blending it with various metallic oxides, the potter is enabled to produce all the well-known varieties of coloured pottery, paving tiles, &c.; thus a red colour is conferred by the peroxide of iron, blue, by the oxide of cobalt, green, by the oxide of chromium, black, by the oxide of manganesium, and various intermediate tints by the judicious intermixture of these and other metallic oxides in certain proportions. The heat of the kiln in which articles of pottery are "baked," causes intense chemical affinity to ensue between the alumina and the colouring oxides, so that the tints, or stains, are perfectly indelible by the most protracted exposure to all vicissitudes of the weather.

The quality of bricks materially depends upon the judicious "tempering" of the clay with water, and the subsequent "burning," to expel the water. This matter appears extremely simple, but in fact it demands much practical skill.

For example, if the "brick earth" contain a very large proportion of real clay, the bricks made of it will shrink and crack in the mere drying by exposure to the air; and if it contain a large quantity of sand, then the bricks will be heavy and brittle.

"Tempering" the very same clay in two different ways, will even produce a decided difference in the quality of bricks, as the following account of an experiment will shew in a remarkable manner.

A sample of clay was heavily beaten for half an hour, then divided into two parts; one part was beaten for three-quarters of an hour longer; a brick was made of each portion with the same pressure, in the same mould, then dried and burned under the same circumstances; these bricks were tested as to strength by placing them on a sharp edge, and gradually loading each of their ends with weights; the result was, that the brick made of the clay beaten for half an hour, broke with thirty-five pounds at each end, or *seventy pounds* on the whole; whilst the other did not break until the addition of sixty-five pounds at each end, or *one hundred and thirty pounds* upon the whole.

The strength depended upon the materials of the clay being closely and accurately brought into contact by the mechanical force of the blows used in the "tempering," and thus enabled by the after-process of "burning" to exert chemical affinity for each other in a more powerful and perfect manner than, in their comparatively porous state, of the shorter tempering.

For making good sound bricks, the clay should be dug some years before it is wanted, that it may have time to "mellow," or in other words for the alumina, the silica, and the oxide of iron to act well upon each other by the intervention of the air, then good "tempering," and judicious "burning."

Alumina occurs as an essential constituent of several building materials, as, for instance, in all kinds of slate and granite—the latter consisting of three distinct substances, viz. *quartz*, *mica*, and *felspar*. The first of these is pure silica, the second is a compound of magnesia, and the third, or *felspar*, a compound containing a large amount of alumina.

When the *felspar* predominates, especially in the form of large white crystals, the granite is extremely prone to crumble and decay, and is perfectly unfit for the uses of the architect. Some of the Cornish granite is so remarkable for its spontaneous disintegration, that the variety of white clay called "Cornish clay" (so highly prized for the manufacture of porcelain), entirely results from the decomposition of the felspar.

In these papers on "Chemistry as applied to Construction," frequent mention has been made of *silica*; it is presented by nature extremely pure in the substance popularly known as "crystal," or "rock-crystal," the form of which is a six-sided prism, having a six-sided summit; and from its being perfectly colourless and transparent, the ancients deemed it to be water, congealed into a more solid state than that of ice, and therefore incapable of thawing.

Modern chemistry proves "crystal" to be anhydrous, and to consist of the same substance as flint or *silex*, hence the derivation of the term *silica*. Some of its characters are now to be mentioned.

All varieties of the substance called *quartz*, contain silica in various states of purity, and the fine white sand obtained either from Lynn, on the coast of Norfolk, or from Alum Bay, in the Isle of Wight, present silica nearly as pure as "crystal." Silica is characterized by extreme hardness, insolubility in water under ordinary circumstances, infusibility in common furnace heat, and until the year 1808 chemists regarded it as a *simple earth*.

Sir Humphry Davy experimented upon silica by means of the metal potassium, and made the important discovery of its *compound* nature, proving it to consist of the element *oxygen*, and a peculiar new inflammable substance, which he named *silicon*; other chemists have modified this term into *silicium*, regarding it as a metal, and as such it is ranked in the list of elements already given.

Silicon or *silicium* is a dark brown powder, infusible, and inflammable, producing *silica* by uniting with oxygen, so that the pure matter of crystal, quartz, flint, and sand, may be called *oxide of silicium*; but this substance under certain conditions has the power of uniting with metallic oxides, after the manner of an acid, and is frequently called *silicic acid*, and the compounds that it forms with such oxides are called *silicates*.

The general chemical characters of *silicon or silicium* require more perfect investigation before it can be assigned its proper station amongst the elements. It may belong to the class of non-metallic elements; it may belong to the class of metallic elements; and as experiment proves that the *bases* of all the other substances so long regarded as *earths* are most decided *metals*, analogy strongly justifies the opinion that the substance in question is also a *metal*; it is of no practical importance, but its native combination with oxygen, viz. *silica*, is of the highest value to the architect, engineer, operative, and artist.

The chemical affinity of finely divided silica (sand) for alumina is so great, that the two substances combine to a certain extent, when presented to each other in a moist state, as in the preparation of "brick earth" and "porcelain clay;" hence the advantage of keeping these materials for a very considerable time before use, that the combination may take place and be ultimately perfected by the process of "tempering." The duly tempered clay may then be regarded as *hydrated silicate of alumina*, and the operation of "burning" drives off the water, leaving the *silicate* anhydrous, hard, and of extreme durability. Brick or pottery, when composed of absolutely pure alumina and silica, may be considered as *anhydrous silicate of alumina*; if oxide of iron be present, as it is in common clay, then the result is *anhydrous alumino-silicate of iron*.

Although silica is infusible alone, if it be mixed with potassa, or soda, and heated intensely, it exerts chemical affinity for these metallic oxides, combines with them to form a perfect fluid, which, when cooled, constitutes the invaluable material known as *glass*. In order to understand its chemical nature, some of the properties of potassa and soda require description.

These substances were formerly called "the

fixed alkalies," because they do not evaporate when exposed to a very high temperature, and also to distinguish them from the alkali *ammonia*, which readily evaporates even at common temperatures.

The first of these fixed alkalies was formerly called *potash*, from the circumstance of its being yielded by the combustion of vegetable matters in iron cauldrons or pots. The name is now modified into *potassa*, to harmonize with chemical nomenclature. The second of these fixed alkalies was, and is still, called *soda*, on account of its being yielded by the combustion of a marine plant, called *salsola soda*. The volatile alkali was called *ammonia*, from being found in *sal ammoniac*, a substance first discovered in the vicinity of the Temple of Jupiter Ammon, in Upper Egypt. The word *alkali* is of Arabic origin, and implying *of* or *from a plant*.

From the early ages in which potassa and soda were known until the year 1807, they were regarded as elements; but Sir Humphry Davy found that they could be decomposed by voltaic electricity, that they yielded oxygen and inflammable *metals*, which he named *potassium* and *sodium*, so that the fixed alkalies are true *metallic oxides*.

They are both solid substances, perfectly white, exceedingly caustic and corrosive,—far more so than lime; they dissolve perfectly in water, and change the yellow colour of turmeric root to a deep brown. Either of these alkalies, heated with silica, will yield glass; but they are rarely, if ever, used in a pure or caustic state by the manufacturer of glass on account of their great expense; he employs them as *carbonates* of potassa or soda, and these are well known as common "pearlash" and common "soda."

When mixed in due proportion with sand, and heated in the glass-house furnace, the silica enacts the part of an *acid*, expelling the carbonic acid, taking its place, and producing, with the resulting potassa or soda, a *silicate of potassa or soda*.

In the manufacture of "crown" and "plate-glass" soda is the alkali used, whilst for that of "flint-glass" potassa is most commonly employed; but this glass has an addition of a certain quantity of *oxide of lead*, more familiarly known as "litharge," which has the property of uniting with the silica and the potassa; so, whilst "crown" and "plate" may be chemically regarded as almost pure *silicates of soda*, "flint-glass" is a *silicate of potassa and lead*.

In glass, then, soda or potassa are present, which, in their pure states, are readily soluble in water, and change the yellow colour of turmeric to brown; but, as combined with silica, or with it and oxide of lead, having no such properties, so remarkable are the changes effected upon substances when they are caused to exert chemical affinity for each other, and are also compactly bound together by attraction of aggregation.

If this attraction of aggregation be overcome, as by reducing a portion of glass to an extremely fine powder, and then placing it upon a piece of paper, stained yellow with turmeric, the addition of water will dissolve out a portion of the alkali, and it will turn the paper brown: chemical affinity between the water and the alkali being promoted by diminishing attraction of aggregation.

In some glass there is a very great excess of alkali; and therefore it is extremely prone to decay, or to become dull, even in the solid form of a sheet or plate, by long continued exposure to water.

The ancients appear to have added a larger quantity of alkali than that absolutely required for the vitrification of the sand; for upon the examination of a specimen of ancient glass, it was found beautifully transparent, but always damp, and it even yielded alkaline indications to the turmeric paper without requiring reduction to powder: it was a silicate of potassa with excess of potassa, this being probably added to assist the fusion.

In museums we very frequently find specimens of ancient glass deeply corroded, and their surfaces covered with a beautiful iridescent film; time having allowed moisture to effect its work on the solid though highly alkaline material, the alkali having been partly abstracted, the film of insoluble silica remaining.

VENTILATION AT THE HOUSE OF LORDS.

On Friday last, Professor Faraday delivered a lecture at the Royal Institution, descriptive of the method of ventilating the new House of Lords. He stated, that his opinion had been asked by the Government upon the plan, the merit of which was entirely due to Mr. Barry, and said, that in the account he was about to give, he should make no comparison between this plan, and that of any other individual.—Nothing was more easy in theory than ventilation, and nothing more difficult in practice. Place 100 persons in an apartment well-ventilated, under the most favourable circumstances, and it would be impossible to please them all. In the present instance, he could merely tell them what the architect expected would be the mode of action, the opinion being, he believed, founded on sound views. He shewed from drawings and models, that the House of Lords and its adjuncts, consisted mainly of three divisions; the House itself, with the throne at one end and strangers' gallery at the other; the lobby at one end of the House, and the Victoria Hall at the other. The approximate dimensions of the House might be stated at 90 feet long, 45 feet wide, and 45 feet high. The carcase was entirely fire-proof, and this condition of the structure it had been necessary not to interfere with. The points to which attention had been directed, were:—To supply a certain degree of warmth through an impervious floor; to produce a current of air which should not be sensible, and which there were means of influencing the temperature of, and to change the air as completely, as required by previously ascertained *data*. The apertures for entrance and exit of air were both in the ceiling, those for admission being along each side, and those for exit being along the middle, the motive power, and the principle of the circulation, having to be explained.

The principal heating apparatus was a steam boiler, on the plan of Lord Dundonald, placed in the basement, under the flue of exit, which boiler also supplied a steam jet, issuing in the flue with sufficient force to draw the air after it. The principal steam-pipe communicated with several cokels, placed at the point where the air gained admission, and where after having passed through perforated zinc, over which water was constantly trickling, in order to free it as much as possible from soot and impurities—it was heated, and passed immediately under the floor, along the whole length of the house: this floor being formed of perforated plates covered by thinner plates of metal. It would then ascend flues at the angles of the Victoria Hall, communicating with horizontal flues and chambers above the ceiling, where it gained admission to the house, through perforations in the ribs of the panelling. Now the principle of the circulation within the house, on which great confidence had been placed, was this:—The air being admitted at the sides, at two divisions of the three, into which the ventilating arrangement above the ceiling was divided; the upper part of the walls being occupied by windows, and both sides of the house being exactly similar; it was expected, that the air would have a tendency to descend down each side, to the floor, when the two currents would unite in the centre, and re-ascend to the ceiling, being then drawn out by the motive power. The lecturer shewed several experiments, tending to prove that this circulation would take place, and the expectation had in a great measure, been confirmed by a trial in the building. Some pastile powder was burnt within the range of the current, before its admission to the house, and the scent of this pastile powder was perceptible through all stages of the course, reaching the final exit flue in fifteen minutes. But this was not all, for this powder being burnt, only in the current which gained admission at one side of the house, the scent was perceptible at one side, but not at the other; and he, the professor, had walked across the house in every part of the length, and had always found, that the scent was perceptible at one side only. He found, that the aromatized atmosphere commenced somewhere about the centre, thus proving most clearly to his mind, the correctness of the reasoning, on which Mr. Barry had proceeded. He had further been led to approve of this plan, from the extreme care which the architect had taken, in providing for the different seasons of the year, and extraordinary influences. Other apertures of ingress had been provided under the galleries, which could be made use of as occasion might require; the section of the passage being in all cases so large, that there could be no sensible current. Provision had also been made for cooling the air, by passing the piping through water obtained at the Houses of Parliament from the wells in Trafalgar Square, which had been found to be at the temperature of 45 deg. even in summer, and with which the cokels were filled, in place of steam.

The professor then exhibited the mode of action of the steam jet, the motive power before mentioned, shewing, by means of flame and by the vapour of gunpowder, how, when issuing within a larger tube, it would draw the air after it from a considerable distance.

He said he had great confidence in the result of the plan, and he proceeded to recapitulate what was expected from it. It was hoped, that there would be an absence of any perceptible drafts; also that the walls would be free from being discoloured by these causes, which frequently made one side of a room appear darker than another. There would further, it was hoped, be no tendency to movement of dust in the house; that all sudden changes would be avoided; and lastly, there was the certainty, that the building would be fire-proof. He concluded by apologising to his hearers, and to the architect, for the imperfect description which he had been able to give, and by stating, that whatever be the opinion as to the numerous other schemes, which had been suggested, it ought in justice to the architect to be stated, that he had to take a building planned for another mode of ventilation, and not for his own.

As the success of the scheme above described, is so soon to receive a complete trial, it would be prudent to postpone any remark upon it; but the opinion of Professor Faraday cannot but be considered as satisfactory to our professional readers, proving, as it does, how inadvisable is any interference with the complete control of an architect, over his own work. Should, as it seems probable, the result be successful, it will prove most clearly the foundation for the views, long ago expressed by us, as to the ventilating arrangements, in connection with the architect's duty as the designer of a building. We have always argued, that any interference with the duties of an architect is inadvisable, unless it can be clearly shewn, that the advice of another party would benefit him; and even should the present scheme fail, the opinion given in favour of it now, would shew, that there are no grounds for assuming, that any individuals know the duties of an architect better than he does. But this mishap we have now no expectation of, and we hope that the details will be published, in a more complete form than we have had it in our power to give them in this notice of the lecture.*

AWARDS OF THE OFFICIAL REFEREES.

STONE HEARTHS FOR COPPERS.

Mr. Parker, of Greenwich, having set some coppers with hearths in some cases 9 inches and in others 12 inches wide, the district surveyor gave him notice of irregularity,—"The hearths in front of chimney-openings to coppers now fixed not being at the least 18 inches in front of the arch over the same, contrary to schedule F.;" and the same not being amended, he took the case to the referees.

The builder contended there were no regulations in the Act relative to furnaces for coppers.

The referees determined that the furnace-opening to a copper is a chimney-opening within the meaning of the Metropolitan Buildings Act, and as it regarded the matter in question, that the slabs or outer hearths before the furnace-openings of the coppers were not

* In the library of the institution, a copy of Mr. Foley's statue of Innocence, reduced by Cheverton's machine for the Art-Union of London, was exhibited. Drawings explanatory of several schemes of ventilating rooms, and also the public sewers by means of pipes passing up the fronts of the adjoining houses, and communicating with the chimneys, were exhibited by Mr. and Mrs. Varley. Amongst other objects of interest was a MS. work on the Coliseum, copiously illustrated with elaborate drawings of every part of the building, taken at the time of the excavations by the French during the years 1811, 1812, and 1813. We could not avoid regretting, that so careful an examination had never been published, or that this work did not form part of the collection at the British Museum. It was contributed by Mr. G. Walford.

conformable to the said Act; and they directed Mr. Parker forthwith to amend the same, by laying in front of each of such furnaces or chimney-openings (on a brick fender or on the solid ground), a slab or slabs of brick, tile, stone, slate, marble, or other proper and sufficient material, at the least 12 inches longer than the furnace or chimney-opening, and at the least 18 inches in front of the arch over the same.

EXEMPTED BUILDINGS.—REGENT'S CANAL COMPANY.

With regard to a certain building, believed to be of the second class, now being built on the south side of the Regent's Canal, in the district of St. Pancras, for the Regent's Canal Company, no notice was given to the surveyor of the district, on the ground that buildings erected by the said company were exempted from the Buildings Act.

At the hearing, it was argued that the Canal Company was "a dock company, and that the building in question being to be erected on the land, and to be used for the purposes of the said company, was to be deemed to be a structure belonging to a dock authorized to be executed by Act of Parliament, and therefore exempted from supervision, under the last paragraph of schedule B., part 2, of the Metropolitan Buildings Act."

The referees awarded, "that such buildings and structures only as are within, and in connection with, the works of any dock belonging to any dock company, established and incorporated by Act of Parliament, are within the meaning of the last paragraph of the said schedule B, part 2, and exempt from the supervision prescribed by the said Act.

"And inasmuch as the building in question is not within and in connection with the works of any dock, but is out of the precincts of any dock, and not to be used in connection with any dock, being to be used as stabling for horses employed on the canal, such building is not a structure belonging to any dock, and is not exempt from the supervision prescribed by the Metropolitan Buildings Act."

EXTERNAL CORNICES AND PROJECTIONS.

With regard to building operations in progress at No. 238, Strand, the district surveyor gave notice to Messrs. Bellingham and Co., builders, that "the cornice and entablature over the archway on the east side of the said house are not built of the materials required by the Act, overhang the ground belonging to another owner, obstruct the light and air, and are otherwise injurious to the owner or occupier of the building adjoining thereto on the east side."

The question went to the referees, and the award was, "that inasmuch as the cornice and entablature over the archway on the east side of the house, No. 238, Strand, eastward from the shop front (not being the cornice and entablature of any shop front), are not formed of the same materials as are by the said Act directed to be used for building external walls, or of such other proper and sufficient materials as the official referees have approved or permitted, the same are contrary to the Metropolitan Buildings Act; and further, that inasmuch as the said cornice and entablature overhang the public way, the same are also contrary to the said Act;

And we hereby direct the said Messrs. Bellingham forthwith to take down and remove the cornice and entablature projecting from the said house over the said archway, and in continuation eastwards of the cornice and entablature over the shop front of the said house."

BUILDERS' TENDERS.—The following list of tenders for building the schools and master's house, at Heanor, Derby, has been forwarded to us as a curiosity:—

E. Fish, Nottingham	£1,230	8	7
H. Evans, Heanor	715	0	0
G. Thompson, Derby	689	10	0
F. Freeman, Guilsthorpe	685	0	0
A. Smith, Belper	675	0	0
J. Woodhouse, Heanor	661	10	0
C. Moody, Derby	621	0	0
G. Ward, Derby	594	0	0
M. Donaldson, Derby	574	0	0
J. Nadin, Derby	571	12	10
J. Winstanley, Derby	571	10	0
J. Smith, Derby	563	10	0

BURFORD'S PANORAMA OF CAIRO.

The ability and knowledge of art required for the production of such a work as this are not properly appreciated by the public. Mr. Burford ought to stand high in estimation as an artist of no common order, and is better entitled to the dignity of R. A.-ship than many who enjoy it. From sketches by Mr. David Roberts, and with the assistance of Mr. H. C. Selous (a man of great talent, who is but beginning to know his own power and make it felt), Mr. Burford has produced a work of great excellence, which we advise all our readers to visit.

Cairo, founded in the year 969 of our era, stands in a sandy plain, and occupies a space equal to about three square miles. It is surrounded by a stone wall, and contains nearly 400 mosques, many of which are large and elaborately decorated. The streets, though narrow, are kept remarkably clean: a recent edict, compelling their being watered, swept, and the dirt removed two or three times a day. Listen to this, ye Londoners!

The city contains about 30,000 houses, some being handsome modern erections of stone, from the quarries of Mokkuttam; "others partly of stone and ill-burnt bricks, of a dull red colour; whilst the meanest are constructed of clay. The best are large and commodious, rather than elegant, being far more picturesque than classical; they usually enclose an open court, into which most of the windows look, and are two or three stories in height, with terraced roofs. The front in the street is usually painted in stripes of various colours, especially red, and presents on the ground floor a small door, surrounded by elegant carving, having a large iron knocker and wooden lock; there are also two or three small grated windows placed too high for any one to look in at; on the second and third floors, which project about 2 feet over each other, and are supported on carved corbels, are large bay windows, farther projecting about 1½ foot, and inclosed by a very ornamental lattice work, sometimes painted red or green, from which the inmates obtain a view up or down the street, without being themselves seen."

The panorama is taken from the summit of one of the curious mounds which formerly encircled the city, and includes a view of great extent and variety.

SPECIAL NIGHT AT THE SOCIETY OF ARTS.

The council of the Society of Arts, being anxious that their exhibition of British manufactures and decorative art should be seen by men of influence and station, issued cards to her Majesty's ministers, members of both Houses of Parliament, men of science, &c., for Monday last, and received during the evening about 150 distinguished visitors. Ladies were scarcely expected, and the council were evidently taken by surprise when the Duchess of Sutherland was announced. Her grace however, although nearly alone, a swan in a crowd of crows, examined every thing, and was evidently gratified by the visit.

We heard two members of parliament admit it was the first time they had seen Barry's great pictures, and that they had no idea that England possessed such works; yet both were highly cultivated men and knew every picture that is to be found in Italy!

The exhibition, although it must not be taken as a true exposition of English manufactures, is very satisfactory as a beginning, shewing beyond a doubt, what might be done with a wider organization and stronger inducements to manufacturers to send their productions. The greatest credit is due to the managing body of the Society of Arts, for the manner in which the matter has been conducted; good cannot fail to result from it.

HEALTH OF TOWNS.—On Tuesday last, Lord Morpeth brought in his bill for improving the health of towns. It contains no reference to the subject of intra-mural interments, the Government thinking this subject worthy of a Bill to itself. On the same evening Lord Morpeth presented a petition from the Metropolitan Working Classes Association for improving the public health, praying for a sound and comprehensive health-bill.

RAILWAY JOTTINGS.

The vapours and gases hitherto passing freely off through the chimneys of locomotives, loaded with valuable heat, have of late had a tax of 72° Reaumer levied on their 'absentee expenditure' for the use of the indefatigable *cheval du fer*, by the aid of collective apparatus invented by M. Cabry, engineer in chief of the Belgian line of railway forces, and consisting of a reservoir in the smoke box separate from the boiler tubes, but correspondent with them, and pierced with the same number of holes: water for the condensation of the heat thus detained, is conveyed from the tender by a fixed pipe beneath the apparatus, and a circulation through the heat reservoir is effected by two other tubes fixed at a higher level. An experiment, of a satisfactory nature, it is said, has been tried with this instrument on the Brussels and Antwerp line.——The advantages derivable from railway transit in the conveyance of that fleeting and ticklish commodity, "fresh fish" to a ready though distant market, were strikingly illustrated in course of last week, when 20,000 mackerel caught at Plymouth were whisked off by rail and poured all at once into Billingsgate, where the sudden glut enabled or compelled the retailers to dispose of them at six and even eight for a shilling.——At an inquest on the body of Edward Whitman, carpenter, one of the poor sufferers by the falling of four arches, erected for the formation of a roadway to the premises of Messrs. Pickford and Co., carriers, at the Camden Station of the London and North Western line, the coroner expressed his determination to make a most searching inquiry into the cause of the disaster. William Sanders, a carpenter, in the employ of Messrs. Piper, who was also buried under the brickwork, on being asked by the coroner if he could account for the fall of the arches, said he could not, except that there was an iron tensor rod found broken. Mr. Piper on being asked by the coroner whether he was prepared to say that the building gave way from any fault of his, said certainly not. The jury were then discharged with the understanding that the proceedings would be resumed at Camden town for the purpose of instituting the searching investigation determined on.——On the very same day on which these four arches fell, no less than one-and-twenty arches of the Liverpool viaduct of the Liverpool and Bury line went rattling down, one after the other, in rapid succession, as we have seen a long line of juvenile recruits in "Prussian exercise," one overturning the centre of the other's gravity, till all were fairly prostrate in succession. It is not yet known how the first arch fell, otherwise we should have a key to the whole catastrophe; especially as "it is certain that each buttress afterwards, incapable of sustaining the weight of the arch reared upon it, when that on the other side of it had fallen, was forced immediately outwards, till the entire destruction of the whole was completed in about the space of a minute, or a minute and a half from the fall of the first." In short, the mutual dependance of each upon all and all upon each must have been of a very beautiful and harmonic order, meriting a final issue of a far different description from any so peculiarly associated with card building, or that other juvenile exercise in construction and the mutual disposal of gravitative forces which this untoward issue itself so forcibly suggests. The noise with which one buttress stormed the other in the general onset, it is said, "resembled the quick discharges of as many small pieces of artillery, and was heard for more than a mile off, along the north shore." The six northernmost of the arches "had been only so far completed as to allow of the centerings being withdrawn a few days previous, but the others had been all completed some three months since. They were all of brick, and had been in course of construction ever since last spring."——An extensive hotel at the Stratford station of the Eastern Counties line is now in course of erection. When finished, it will form, it is said, one of the largest buildings of the kind on that line of railway. The station at the junction with the Cambridge line was to be opened for public use on the first of the present month. ——The masons employed at the works of the high level bridge across the Tyne have requested an advance of wages at the rate of 2s. per week. Their present wages are 26s. per week.

TUTBURY CHURCH, STAFFORDSHIRE.

TUTBURY CHURCH, STAFFORDSHIRE.

The parish church of Tutbury is situated half way up the hill upon which stood the castle, built by one of William of Normandy's most enthusiastic followers, Henry de Ferrars, who had left his native land in company with the Conqueror, and to whom William gave such ample estates in Derbyshire and Staffordshire, that the family have been unto the present time most intimately connected with the history of those counties. The hill rises abruptly from the banks of the Dove, and presents a strong and commanding point for the erection of a strong-hold, advantages seldom lost sight of in the troublous ages which succeeded the Norman invasion. This castle became one of the most famous in England, and remained in the hands of the Ferrars family until it was forfeited to King Henry the Third by Robert de Ferrars, the rebel Earl of Derby. That monarch bestowed it on his second son, Edmund, Earl of Lancaster, and his descendant, Thomas, Earl of Lancaster, having fortified it against King Edward the Second, but being unable to hold it, it was surrendered again into the hands of royalty. In 1350, John of Gaunt rebuilt the greater part of it, and it became the principal seat of the Dukes of Lancaster. Its latter history is chiefly remarkable for the sojourn within its walls of Mary Queen of Scots as a prisoner, and for Lord Loughborough's maintaining a garrison here to support Charles the First. He was, however, compelled to surrender it to Sir William Brereton, the Parliamentary commander; and at the conclusion of the war, about 1646, it was reduced nearly to its present ruinous condition. There is little now left but the external walls and a few towers and gates, scarcely enough to give a notion of its original strength and importance.

The Priory, which now forms part of the parish church, was founded by Henry de Ferrars in or about the year 1080, but the editors of the last edition of "Dugdale's Monasticon" incline to think that it was more probably in the time of King William Rufus, in whose reign the charter of foundation was evidently framed. It was dedicated to the Virgin Mary and became a cell to the Abbey of St. Peter super Divam in Normandy. The granter grants great privileges to the monks; which were confirmed and added to by his grandson: and it continued to flourish in great prosperity until the suppression of the monasteries. The site of Tutbury priory was granted in the 6th of Edward VI. to Sir William Cavendish, who pulled down the priory and part of the church, together with the chapel of St. Stephen, to build himself a large house. The property is at present in the hands of the Duke of Devonshire, who has the gift of the living.

The west front of the church is particularly beautiful and remarkable for the richness of its Norman details. The principal door is a study for the architectural student, presenting as it does examples of varied enrichment, among which the chevron and billet moulding, as well as the bird's head decoration abound. The circular-headed window above, is equally profuse in ornament, and the arcade at each side is particularly interesting for the example it affords of the interlaced circular arch, producing the pointed arch; the spaces on the wall between each are sculptured in diaper-work; a bead-moulding also sculptured divides the stories; the flat buttress of the tower on that side next the door, bespeaks its age; the heavier buttresses at the angles of the tower are the work of a much later period, as also is the upper story of the tower, and its battlement, as well as that over the western gate. The lower window in the tower was originally a door; but the pillars on each side have been removed, and one row only of the ornamental stones which formed the top allowed to remain; and this accounts for the anomalous and tasteless combination of parts it now forms; the whole of the portion to the left of the door is also a modern antique, and in equally bad taste, having been executed when the church was repaired some years since, and the principles of Norman architecture little understood.

Within, the chancel roof is supported by massive Norman pillars; but the chief glory of the building is the fragment of the original work exhibited in our view.

The Artists' General Benevolent Institution.—The annual dinner in aid of this institution took place on Saturday last, at the Freemasons' Tavern, Great Queen-street. The Hon. Thomas Baring was in the chair, and was supported by a number of well-known artists and friends of art. 560*l.* were subscribed.

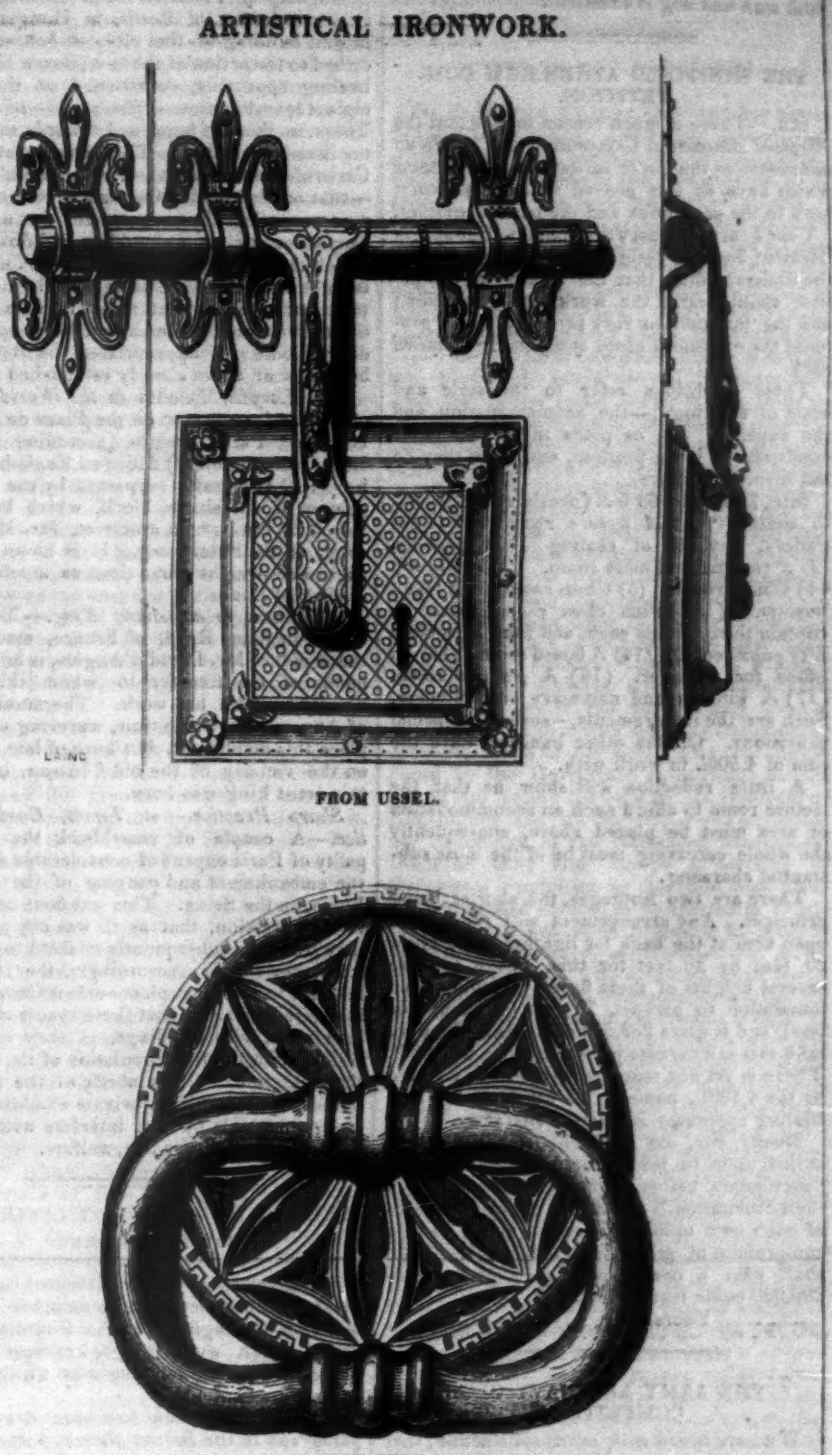
Chinese Glass Painting.—We are told that several specimens of Chinese painting upon glass, of which the colouring, especially that of the faces, is rich and delicate, have lately arrived at Glasgow.

ARTISTICAL IRONWORK.

ANNEXED, we make some further additions to the number of examples we have already given, and which we may venture to say have had a useful effect.

No. 1 is a beautifully decorated lock, shewn in front and in profile. The ornament upon it is very good. The hasp forms also the handle of a bolt, which passes through staples fashioned like a double *fleur-de-lis*. This ingenious contrivance is worthy of reproduction, and must give great additional security in closing the door. The lizard upon the hasp is a very common ornament of the 15th and 16th centuries. The door of the church of St. Nicholas, Gloucester, has a very fine knocker similarly ornamented; and a ring-handle on the door of St. Saviour's, Southwark, may be cited as a metropolitan example. The arrangement of the nail-heads in the lock are also worthy of notice, as they shew how carefully the older artists studied the general effect of all articles of use or necessity comprehended in their designs. This lock is upon the door of a farm-house at Ussel (Corrèze).

No. 2, a ring-handle, is to be found in our own country, upon one of the doors to the private residences in Eton College. The escutcheon here is large, and richly ornamented. Many such exist, and present very great variety in design and elaboration in ornament; indeed, the work of the older artists in metal appears to be as full of invention and study as the public edifices they adorn; the *artist* appears in all the works of the artificer; and the famous blacksmith of Antwerp was but one among many who possessed the qualification of art, and applied it continuously to their works.



ARTISTICAL IRONWORK.

FROM USSEL.

FROM ETON.

EXHIBITION OF THE SOCIETY OF BRITISH ARTISTS.

THE manner in which this exhibition has been spoken of by some of the journals must pain every generous lover of the fine arts, anxious to find able and impartial artistical criticism; and must tend, when the statements are compared with those of an equal number of other papers and found diametrically opposed, to destroy public confidence in periodical reviews, and to render the artist totally indifferent to praise or blame. For our own part, we have no hesitation in saying that, so far from being worse, the exhibition is decidedly an advance upon those of former years. Works of the first class there are perhaps none (how few are produced within the year in this or any country?), but of their class a large number are first-rate; and if we compare the works of each individual with his previous productions, and this seems to us the only way of arriving at a satisfactory conclusion, we shall find that a considerable proportion of them have made a stride onwards.

The president for example, Mr. Hurlstone, has cleaned his pallette since last season, and has painted better than he has done for years. His "Girl of Sorrento at a Well" (No. 47) and "Sybilla, a filatrice of Meta" (274) are most excellent pictures.

Mr. Pyne's "Neckar at Heidelberg" (No. 30) is decidedly one of his finest productions, honourable alike to himself and the country. Well do we remember the glorious ruin, so nobly placed, and the enthusiastic old Frenchman who has lived there many years, drawing and etching every portion of it. The contemplation of Mr. Pyne's picture re-called some pleasant days.

Mr. Allen has produced a remarkably fine landscape, called the "Vale of Clwyd, seen from the hills dividing Flintshire from Denbighshire,"—certainly his best work for a considerable time, and full of beauty. The distance and sky, especially, are admirably treated.

Mr. Prentis, also, has made an advance. "The Close of a Selfish Life" (No. 25) is a work of great power,—full of thought, and thought-inducing. An old man is on his death-bed,—

> "And that which should accompany old age,
> As honour, love, obedience, troops of friends,
> He must not look to have."

Two hired crones are alone in the room,—one is removing the ring from the dying man's finger, the other, at a drawer, is examining the goodness of some linen she is about to remove; a volume of Hume's Essays, fallen open on the ground, serves to suggest that even religion was wanting to console the lonely one.

Mr. Montague has improved greatly; his "Dutch Passage-boat crossing a River" (61), and "The Mill Ford" (94), are amongst the best things he has yet done.

Mr. Baxter's "Wanderers" (54), a young mother at the road-side, with a child at her feet,—

> "She once, perhaps, in village blest,"—

is full of fine feeling and careful painting.

Mr. Clater, again, has made a surprising improvement on his last two years' work. No. 114, "Gipsies' Camp—Evening—Preparing for the Meeting of the Tribe," may be pointed to in proof of the assertion.

Mr. Anthony, with much genius, is still extravagant. No. 113, "A Summer Morning," must, however, be exempted from this charge: it is a gem. The freshness and repose belonging to morning are charmingly conveyed.

Mr. Woolmer has a picture of considerable size and pretence, "The Morning after the Battle of Hastings," but it is less satisfactory than some of his smaller works. In 412, "An Arcadian Scene," the neck and arms of the kneeling figure shew how much more satisfactorily he could render his ideas than he usually does, if he would let industry aid imagination.

Mr. Holland should have been mentioned before, especially for No. 246, "Sunset," a picture of great poetical beauty, and justifying us in placing him also amongst those members of the society who have done better than their previous best this season.

Mr. Clint, Mr. Tennant, Mr. Boddington, Mr. Hassel, Mr. Pidding, Mr. Herring, Mr. Josi, and Mr. J. Wilson ought also to be mentioned.

In this hasty review, which had one special object, we have omitted mention of the two pictures of the greatest pretence in the room: No. 95, "Lord Hardinge's Bivouac on the Field of Feroozshah," an elaborate work, by Mr. Salter, and "The Widow of Nain," by Mr. Latilla. The latter, although flat, and painted rather from the early masters than from nature, has nevertheless an elevated character and high intention, which ought to secure consideration for it.

If the visitor would enjoy a laugh, he should look for No. 174, "Launce's Lecture," a

capital little picture by Mr. Dicksee, which deserves a better place. The expression of both man and dog is excellent.

THE SHEFFIELD ATHENÆUM COMPETITION.

Sir,—There is much reason to fear that the *Sheffield Athenæum Competition* will prove an *addendum* to the list of invitations to architects which have of late proved so unsatisfactory, both to the profession and the parties inviting.

Your Journal of last week contained the advertisement desiring designs to be submitted, upon the understanding that the successful competitor should carry the work into execution; and the instructions very properly add "*provided the conditions above specified are complied with.*"

These conditions refer to the style and scale of drawings;—the accommodation and the expense. Let us place these two latter conditions in juxta-position, and see if they do not involve a failure.

Site, 72 feet by 63 feet (nearly rectangular), to contain "(1) *A lecture room* with light gallery, capable of seating 1000 persons. (2) A reading and news room. (3) A library. (4) Coffee room. (5) Chess room. (6) Gymnasium. (13) Seven class rooms (three to contain thirty pupils each, and four to contain fifty pupils each). (14) A board room. (15) An office for manager. (16) A porter's room. (17) A kitchen and necessary conveniences. Such are the requirements,—seventeen special provisions. On the other hand, we have the sum of 4,500*l.* to work with.

A little reflection will show us that the lecture room to afford such an accommodation or area must be placed above, consequently the whole carcasing must be of the most substantial character.

There are two frontages, the shorter being principal. Any arrangement will require an open area at the back for lighting, &c.; allow 20 feet by 20 feet for this. Take for the several heights of these floors, including from foundation to parapet, 70 feet (it cannot be less), and it gives 289,520 cubic feet. Shall we take this at a carcase price? It gives us 7,000*l.* There is yet one more provision to be covered by the 4,500*l.*, namely, "a warming and ventilating apparatus of efficient character."

Really, Sir, our Sheffield friends must be called upon to revise these 'instructions' or 'particulars' before any architect can entertain their 'invitation.' With the utmost diffidence of one's own opinion, it seems to me to be a compromise of principle in that architect who shall offer a design with such pretensions. 290,000 cubic feet! 4500*l.*!!

Yours truly, Oh! Oh!

THE ARMY AND NAVY CLUB COMPETITION.

We have heard with much satisfaction, that our remark in last week's number was received in the spirit in which it was written, and immediately acted on. The committee invited any gentleman who had inadvertently seen plans before they were sent in, and was cognisant of the architect's name, to abstain from attending during the selection, and the invitation was accepted. It gives us great pleasure to find an anxious desire prevailing in the committee to decide honestly and fairly, and that they appear to be proceeding with great care. Sixty-nine designs have been received, some of them prepared at great cost. They were numbered as they arrived, and are being examined in that order. When the committee have selected a certain number of designs as the best, in doing which it seems nearly certain that they will seek professional assistance, the whole will be submitted to the members at large for their opinion, and ultimately, there is no doubt, will be exhibited to the public.

The Paris Institution of Civil Engineers.—The endeavour on the part of the Minister of Public Works to establish an institution of civil engineers in Paris has been eminently successful, and an appropriate building will soon be finished to receive it. The French government are said to be anxious to induce young men of talent to adopt civil engineering as a profession.

FOREIGN INTELLIGENCE.

Burning of Theatres.—The burning of the German theatre of Pesth, in Hungaria, the largest building of that city, is generally ascribed to the action of the new (Baron Hügel's) heating apparatus, constructed on the principle of reverberation—*refoulement*—of caloric. There, as the fire happened towards morning, no lives were lost. The conflagration at Carlsruhe was an event—terrific, awful. Then—that of Stuttgard. German architects propose now a legislative enactment, that a certain proportion, or ratio should be laid down,—by which the number, position, size, &c. of *doors* is to be *regulated*. One of our German contemporaries says, that to every area of the theatres capable of holding 300 people, one door should be appropriated, be it in new buildings or those already established

The Largest Monolith in the World.—The obelisk of Luxor, now on the Place de la Concorde at Paris, weighs (according to Mr. Lebas, the engineer) 246 tons English. This, however, is greatly surpassed by the granite column of one single block, which has been raised by the French architect, Mr. Montverrand, at St. Petersburg. It is about 96 feet high, and weighs *three times* as much as the obelisk of Luxor.

Monument to an Artist King.—This memorial to King René, of France, made after the model of Mr. David d'Angers, is now in the hands of the founder to whom this artist usually confides his work. The municipality of Angers was, some time, wavering where to place this monument, but have of late decided on the vicinity of the old Château, in which this artist king was born.

Sharp Practice—at Times, Good Practice.—A couple of years back the municipality of Paris expended considerable sums for the embankment and *quaying* of the Isle St. Louis, on the Seine. This was done under the tacit impression, that as it was *city property*, they would be subsequently enabled to do with it as they liked. Accordingly, the land was laid out in building plots—when Government interfered, and *said*, that these spaces could *not* be covered with buildings, as they would interfere with the free circulation of the air, and therefore impair the salubrity of the adjacent parishes; that, in fine, private emolument can never encroach upon or interfere with public convenience, and, far less, welfare.

THE GAS MOVEMENT AT LIVERPOOL.

GAS FOR NOTHING?

With reference to the Liverpool Gas movement, we have received a communication from Mr. Cox, the engineer of the Guardian Company, which we willingly present to our readers, reserving our remarks till they have perused its contents.

Sir,—My attention has been drawn to a paragraph in the *Bristol Mirror*, purporting to be copied from your paper, in which it is stated that in my evidence before the surveying officers, at Liverpool, I said that "Companies might sell gas, with a profit, at 2s. 8d. per thousand cubic feet; and moreover, that at Bristol it actually costs less than nothing."

It is due to the gas companies at Bristol, as well as to myself, that I should correct this statement. What I said was, that the Liverpool Guardian Gas Company would be able to supply gas at 3s. 8d. per thousand cubic feet, with a remunerating profit; but I prefaced this, by stating that advantages peculiar to Liverpool would enable them to do so: that no inference could be drawn of the cost of gas in one place from its cost in another, as it must depend on local circumstances, and that it was possible, in some places, to make it for nothing, such as where a demand for a costly description of coke made the value of the produce of coke more than the cost of the coal,—and I instanced a private works in Bristol, whose consumption of this sort of coke exceeded their make, and enabled them to produce gas for next to nothing. No inference was intended to be drawn from this statement, that the gas companies at Bristol could make gas for nothing, even by adopting the same process as is used by this private company, as there would be no sale for the produce of coke at a remunerating price: and I most distinctly deny that I in any way meant to say either that the Bristol gas companies made their gas expensively, or charged for it highly, or that I gave any opinion at all on the subject; though, at the same time, I may observe that my evidence that gas can, in some situations, be sold at 3s. 8d. per thousand cubic feet, will not appear, even to persons unacquainted with the subject, so extraordinary, when it is considered that the present price at Liverpool is only 4s. 6d., and that to large consumers at Bristol it is the same.

Had I said what the paragraph quoted imputes to me, that all gas companies could supply at 3s. 8d. (not 2s. 8d.) at a profit, I should have stultified myself when, at the same time, I gave evidence that other companies with whom I am connected charge 6s. and 7s. per thousand cubic feet, and while I myself, as lessee of two works, am charging 10s. per thousand.—I am, Sir, &c., John Cox.

Bristol, 23rd March, 1847.

Our readers will at once perceive that Mr. Cox cannot have seen our articles on "The Gas Movement," particularly those of 30th January, 20th and 27th February, and 6th March, or, indeed, any one of them, otherwise he would have been led to suspect that the little newspaper extract which he quotes,—and even that too erroneously,—was only a small portion of a longer article, the context of which might materially affect the inferences to be drawn from the passage quoted, if not too its more immediate sense,—as also, more particularly, does the erroneous quotation itself of the passage in question, which we ourselves have seen correctly enough rendered in at least half a hundred of the provincial and other papers, but which a portion of the Bristol press appears to have erroneously quoted. In the article of 20th February, from which alone the extract could have been taken, and in the numerous and perfectly accurate repetitions of that extract itself in the newspapers of the day, there was no such unqualified statement as "*that at Bristol* it actually costs less than nothing." On the contrary it is twice repeated, in that article, and, unless we are very much mistaken, was so expressed in *all* the extracts from it that we have met with, that "*in* one *manufactory* at Bristol,"—such was stated by Mr. Cox to have been the case; and not a word is said about "the gas companies at Bristol" at all. Moreover, in quoting from Mr. Cox's own evidence, as reported in the Liverpool papers [in which reports, by the way, the error of 2s. 8d. instead of 3s. 8d. must have arisen, and not with us], this very passage *was itself prefaced* by the precautionary remark that "*the variation of the price of gas in various localities is very great. This probably in part arises from the variation in the expense of coals;* but that is by no means sufficient in many cases to account for the difference:" and, in the very next sentence follows the remark in question, about a "manufactory at Bristol." But besides all this, we also took care, in the very same article, to point out the fact that "It is under a patent, however, 'for the creation of heat,'" and "by means of the profit arising from the preparation and sale of coke," under that patent, that "gas *in some circumstances*, can be reduced in cost to *little or nothing*." And we even added that the patented process was more particularly applicable "*where there is a large demand for coke*, and at Liverpool," &c. Mr. Cox, therefore, is led 'distinctly to deny' what we have never either stated or inferred, insinuated or imputed, far less left to be understood without sufficient explanation. We desire at all times, and in all cases, to state every thing honestly and fairly; and we are very much mistaken indeed if we do not pass out of the jet of Mr. Cox's gaseous ordeal, not only unscathed, even in his own estimation, but with a fixed persuasion, moreover, on his own mind, no less than on the minds of our readers in general, that we are neither capable of voluntary misrepresentation, nor very likely to fall into that which may, nevertheless, involuntarily arise in even the most carefully conducted journals.

Lord Northampton's Fourth Soirée to the fellows of the Royal Society was given last Saturday, and was more numerously attended, as it seemed to us, than on any previous occasion. Prince Albert was amongst the visitors.

THE BRIGHTON SURVEYORSHIP.

At a recent meeting of the Brighton Commissioners, the committee appointed to examine the testimonials of candidates for the office of surveyor, brought up their report. From this it appeared that testimonials had been received from the following gentlemen:—

Allen Anscombe, Brighton; William Assiter, Maidstone; Thomas Baylis, Ledbury; William Caveler, Margate; J. W. Cole, Coventry; John Dallimore, Brighton; John S. Erlam, London; Geo. H. Fenwick, Kennington; Charles Geoghegan, London; Thomas Y. Littlewood, Thornton Heath; Joseph Henry Spicer, London; John Stead, London; Thomas Wilson, Odiham; and R. W. Wright, Bristol.

The committee, after examination, reduced the list to seven, viz., Messrs. Anscombe, Baylis, Caveler, Dallimore, Spicer, Stead, and Wright; and ultimately recommended the commissioners to appoint Mr. Stead. After much discussion, the commissioners proceeded to the election, and Mr. Stead was chosen. The numbers were:—For Mr. Stead, 46; Mr. Dallimore, 30; Mr. Anscombe, 9.

VENTILATION OF MINES—GOVERNMENT INTERFERENCE.

INSTITUTION OF CIVIL ENGINEERS.

At a meeting on the 16th inst., the paper read was by Mr. Joshua Richardson, "On the ventilation of mines." After stating the necessity for establishing a more complete system of ventilation as a measure of common humanity, and the advantageous results in a commercial view which would arise from enabling the miners to develope their physical force with more benefit to themselves, and allow them to do a greater amount of task-work for the same sum, the paper proceeded to describe the system of ventilation at present pursued in Newcastle and its vicinity as being that of the district where the greatest attention had from necessity been paid to the subject, which is one of undoubted difficulty: it is at the same time one of almost national importance, for as a mercantile nation much of our greatness depends upon our manufactures; and unless the fuel for producing power is obtained at a reasonable price, the results of all our attention and skill will not enable us to compete with foreign labour. Without good ventilation our mines cannot be worked, or at least must be so imperfectly conducted as to render fuel scarce and expensive. Much attention has been paid by very able men to this subject, and still the necessity becomes more apparent for some great alteration, to avoid the gradual but certain waste of human strength from long sojourn in mephitic air, or the frightful loss of life from the explosions of the gases exuding from the coal in the progress of getting.

The nature of these gases, which are the carburetted hydrogen, the olefiant, the sulphuretted hydrogen, and the carbonic acid gas, were severally treated of. The three first are known as fire-damp, being explosive when mixed with certain proportions of common air; the latter is known as choke-damp or after-damp; it is produced in large quantities by explosions, and completes the fatal work left undone by the explosive gases. It also exists in old workings and ill-ventilated mines.

These gases require a large supply of pure air to dilate and render them innocuous, and a still larger quantity is necessary to support the respiration of the number of men and animals employed in a mine. The entrance, therefore, of the fresh air and the exit of the foul air, should be free and capacious. This is generally effected by having two pits, one termed the "downcast" and the other the "upcast" shaft, sunk to the coal-bed; down the former of these the fresh air sinks, and after travelling along through the various galleries, as it is guided by doors and other means in various directions, it returns to the bottom of the latter (the upcast) shaft where a furnace is established in which it is rarified and rendered so much lighter that it readily ascends the upcast shaft; thus causing throughout the mine a current of air, which, when all succeeds according to the design of the mining engineer, affords ample ventilation in all parts. Sometimes, however, an unusual escape of deleterious gas takes place by the carelessness of the boys having charge of the traps and partition-doors in the air-ways; some of them are left open or improperly kept shut, and the current of air is diverted or stopped; or one of the workmen from heedlessness or cupidity in desiring to have more light for his work, opens the safety lamp, the inflammable gas is ignited, and an explosion ensues. From one or more of these causes arose all the accidents that have occurred, and it appears that hitherto no precautious measures have sufficed to prevent their occurrence.

The paper dwelt at some length on the present methods of ventilation, and the objections to them, illustrating the positions by quotations from the best authorities on the subject; all of which went to shew that, in spite of all the care and attention that had been given to the question, all the skill of the engineers, and the introduction of the safety-lamp in 1816, the loss of life had been greater since that period than it was in a corresponding period previous to its introduction. This must not be charged entirely to the lamp; for, although it may have rendered men bolder, and induced them to trust too much to the lamp, in venturing into those parts of the mines which formerly would have been abandoned, still it must be borne in mind that, as the coal was got at greater depths and distances from the shafts the ventilation became more difficult, and from the greater number of persons employed in one mine, if an accident did occur, the loss of life was greater in proportion.

The merits of the safety-lamps produced almost simultaneously by Sir H. Davy, Mr. G. Stephenson, and Dr. Reid Clanny, were canvassed, and the greater amount of merit, as well as the credit of the first production of it, was thought to be due to Mr. Stephenson. The author then entered into calculations, shewing that the dimensions of the "upcast" shaft should, in all cases, be increased in proportion to the augmented volume of the air from the expansion at the higher temperature at which it leaves the mine after traversing all the passages; and if this were attended to, not only would the general ventilation be better, but, in the event of an accident occurring, by an explosion, or the derangement of some of the air passages from falls of the roof, &c., an extra power could be applied, which would at any rate prevent a portion of the frightful loss of human life which now occurs. It was evident from the whole statement, that although, in certain cases of fiery mines, some improvements might be advantageously introduced, yet that, in the majority of good mines, the present methods sufficed to maintain them in a healthy and safe state; and that, in almost all cases, it was the culpable neglect of, and not the want of, the means of prevention, that caused the destruction of health life and property in the mining operations of the kingdom.

In the discussion which ensued, the interference of Government by legislative enactments, with respect to methods of ventilation, was deprecated. It had become fashionable now, whenever a difficulty occurred, to recommend legislative enactments as an universal panacea, as if a committee of the House, or a body of commissioners, none of whom probably possessed any practical knowledge of the subject, could at once fall by inspiration upon the methods of prevention or cure which had so long eluded the careful investigation of scientific and practical men, whose time, talents, and fortunes had been all devoted to the subject from that great incentive to exertion, "self interest." When the example of foreign countries was quoted, it should be at the same time shewn in how backward a state they were in engineering, in mining, in commerce, and in fact, in every thing with which the Government interfered, as compared to the high state of perfection arrived at in this country. What was their position with respect to common roads, canals, railways, the extent of their mines, and the general amount of manufactures, as compared to those of England? and yet they had the "advantages" of the "wisdom" and the "fostering protection of Government;" whilst in England there was nothing but competition to urge manufacturers and miners to bring their produce to market of the best quality and at the cheapest possible rate. In short, it was asserted that, to do any good, Government must leave the matter alone.

We are not, now, offering any opinion of our own on this point, but simply reporting what was expressed by others.

NOTES IN THE PROVINCES.

H. R. H. the Prince Consort has signified his intention of honouring Portsmouth with his presence, early in the summer, to lay the foundation-stone of the new hospital to be erected there, on land which the Board of Ordnance has liberally granted. Her Majesty the Queen has graciously bestowed her patronage on the institution.——Several mural paintings have been discovered on the south side of Easton church, Suffolk. They were concealed by accumulated coats of whitewash. ——The capacious new reservoir at Kensington, Liverpool, lately opened in connection with the Green Lane Water-works, recently gave way, so as to allow the water to ooze out and escape in nearly 50 places, by the pressure of the contents forcing it through the puddling on which the brickwork is erected on the western embankment. The water, which did not nearly reach the level of the waste-pipe, was quickly turned off into the common sewer, which has had the benefit of a good cleansing, while fortunately very little damage it is thought has been done to the reservoir, although confidence in its sufficiency must have been seriously shaken. Indeed, it is believed that, had the accident not been discovered before night set in, the undermining process would have led to a very serious destruction of property, if not of life also. The fear engendered by the Harrington catastrophe cannot but be still before the eyes of the residents of Kensington and its vicinity.——The building committee of the Gateshead Mechanics' Institute lately laid before a meeting of the annual committee an elevation and plans of the proposed edifice, to be erected in West-street, which had been prepared by Messrs. Wardle and Walker, of Hood-street, Newcastle, architects. The building fund being small, no improvident expenditure will be incurred in architectural ornament, which, as the *Gateshead Observer* curtly observes, would have anything but an ornamental effect in the shape of a mortgage; but the structure will show a good and handsome front, and be a credit to the institution and the town. A general meeting of the members was to be held, in order to take the plans into consideration, and advise the building committee as to their future proceedings.——At Stirling, a Water Supply and Sewage Manure Company, with a capital of 15,000*l.*, has been projected. Although few towns command natural advantages equal to Stirling, for securing not only an abundant supply of pure water at a cheap rate, but also for the application of a proper system of sewerage, the inhabitants have long suffered from the inadequacy of the supply of water and the want of any general under-sewerage, so that the streets and open sewage channels are constantly filled with fœtid, offensive, and unwholesome matter, the effectual cleansing of which can best of all be carried out in connection with a company offering the twofold benefit of a full supply of water and a proper system of sewage, the sewage water from which will go far to pay its own way, and to benefit the agricultural vicinity by an every way profitable disposal to farmers as manure.——The grand jury of the city of Cork have adopted, as their own, the memorial for a school of design presented to them by Sir Thomas Deane. A prayer so recommended to Government, remarks the *Cork Examiner*, cannot but be successful.——It seems that the million sterling, or thereby, expended on the relief works in Ireland during the month of February was "entirely independent of the expenses incurred through the commissariat and other public departments for the same general object!" If the depth of the wretchedness of this miserable and "etiolated" country,—as it has been significantly termed by Mr. Chambers, the journalist,—may be estimated by the rapidity with which the means for its relief mount up into more and more immense accumulations of sterling money, and by the still greater rapidity with which such literal and physical loads of gold and silver are not only shovelled by wholesale into the gulph, but swallowed up and absorbed within it as if no such vain endeavour had been ever made to

reach the bottom and consolidate the bog,—its depth would literally appear to be the unfathomable void of a bottomless pit. In fact, the evil seems to feed on what has been administered by way of remedy, and to grow with the growth of its quasi-antidote. And now comes the grand self-generated difficulty—the retreat—which can scarcely fail to be in itself a source of new disaster. A fifth part of that immense army of labourers, so many of whom have been needlessly attracted from other employment, such as the reproductive tillage of the ground, are forthwith to be shaken off the "public work" rolls, and turned adrift, at a week's notice at furthest, a notice which, as an M. P. (who plainly speaks from any thing but the dire experience of those who know from trial how difficult it often is to procure employment) declares to be amply sufficient for the procurement of an honest livelihood. In some districts, indeed, the proportion of those to be thus disposed of will be far more than a mere fifth; but however great the evils attendant on this new measure may prove to be, the crisis is now perceived to be such, that immensely greater evils still are likely to result from the past and present abandonment of the soil, and of all future prospect of the usual harvest. The most serious alarm is now declared to be felt by those who see in the very way of the suffering people no other surety than that of being gored on either horn of this terrible dilemma. Either the public works must be so far suspended at the risk of fearful evil to tens of thousands, or the hope of a harvest must die within the breasts of all, at the risk of a still more fearful evil to hundreds of thousands, nay to millions. Even already, thousands of well doing farmers, panic stricken, are literally flying the country as emigrants to the land of universal refuge across the Atlantic Ocean. Gross abuses of the public work system are still said to prevail on the part of superintendents as well as of labourers, thus exhausting the far more than princely means, designed for the benefit of the destitute alone, to no good end, and that too at both extremeties of the scale of dependance—from above in extravagant superintendence, as well as from below in worthless work,—and thus in burning the candle at both extremities is evil accumulating on evil, and all at a cost even nationally ruinous though worse than useless.

WESTMINSTER COURT OF SEWERS.

A GENERAL Court of Sewers for the City and Liberty of Westminster was held at the Court House on Friday, Capt. Bague, R.N., in the chair. A long report was read from the surveyor to the court, setting forth that a sewer in Hertford-place, Notting Hill, had been built with pit-sand mortar, contrary to the regulations of this commission.

The clerk of the works gave evidence, that during the progress of building the sewer, he observed that pit-sand mortar was being used for that purpose. He ordered the men at work to desist, but they took no notice whatever, and on a subsequent visit he found that the sewer had been completed. The sewer had been built by Mr. Holmes, of Notting Hill.

Mr. T. L. Donaldson was of opinion that a formal notice in writing should be given to the parties.

The subject led to a good deal of discussion, and it was finally resolved unanimously, that Mr. Holmes should take up the whole of the work and rebuild the same according to the directions of their surveyor.

Mr. Dethick, a builder, of the parish of St. Anne, Westminster, appeared before the court to complain of the exorbitant charge made upon him, by the surveyor of that parish, for relaying the pavement removed in the construction of a sewer, viz., 3s. per yard, which was considerably more than ever had been demanded in any other parish. He wished the advice of the court thereon. The subject was referred to the surveyor of the court, to report thereon at the next meeting.

Arching over the King's Scholars' Pond Sewer.—It having been determined at a former court that the King's Scholars' Pond Sewer should be arched over jointly at the expense of this commission and the Westminster Improvement Company, the question of the amount of contribution on the part of the public came this day before the court. Mr. Donaldson was of opinion that it would be unfair to charge the public more than was absolutely necessary to meet the wants of the particular locality. The first size sewer might be amply sufficient for their own local purposes, but would be insufficient for a district, and therefore he believed the expense attendant thereon should be equally borne by the district to be benefitted. He should accordingly move that 10s. per foot be the fixed price for each side when any main line of sewer was required to be arched over. Mr. T. Harrison objected to this, as it might so happen that the covering of a sewer would not cost 1*l.* per foot, and they had no right to derive any profit from the public by the work. The Clerk said no main line of sewer would cost less than 1*l.* per foot. If they left the question open without fixing any maximum price, in every sewer that was to be constructed, builders would be continually coming before that court to complain that expenses had been unfairly placed upon them.

Mr. J. White deemed it immaterial as to the size. If anything could increase its value, it would be any additional depth they might obtain.

Mr. W. Donaldson objected to their fixing depth as the test of payment. Were it so, builders would lay in a temporary drain, rather than an efficient one, to save expense.

It was finally resolved, on the motion of Mr. Harrison, seconded by Mr. T. L. Wood, that for any sewer to be built in future at the charge of any district, the contribution of the public should be as follows:—No. 3, 4s. per foot; No. 2, 5s. 6d. per foot; and No. 1 7s. 6d. per foot; and any size exceeding No. 1, 10s. per foot.

Miscellanea.

PRESERVATION OF METALLIC SURFACES FROM RUST.—A Sheffield manufacturer in lately advising with us as to the best mode of preserving the polish of steel surfaces in packed goods, especially during transit, assured us that the difficulty is one which has given great and perpetual annoyance. The packing of steel goods in some simple mode of galvanic connection with slips of zinc, the more electro-positive metal, so as to render the less positive steel more negative, and hence less oxidizable, we at the moment recommended for trial, but probably even in such cases, though more particularly for engineering or other purposes, a recent suggestion to coat the surfaces in a peculiar and permanent way with copal or lac varnish may be of value. It has been proposed to effect this very desirable object by dipping or washing the finished article in a dilute solution of acid, two parts sulphuric, and one nitric, and then when dried, without fingering or rubbing, by coating it with the varnish, which, it is said, under such treatment, will never peel off, unless, of course, the surface be exposed to friction or abrasion. Copal, with a little litharge added, is considered as best suited for this purpose.

STAINED-GLASS WINDOW, LIVERPOOL.—A stained-glass window, executed by Mr. Wailes, has been put up in St. Martin's church, Liverpool, at the cost of about 350*l.* The prominent subject is the Crucifixion, with the Virgin and St. John on each side, and St. Mary Magdalene embracing our Lord's feet, the figures being as large as life. This group occupies the three centre lights of the upper portion of the window; and in the corresponding compartments beneath the transom are the apostles St. Peter, St. Paul, and St. James. A border of groups is carried round the whole window, composed of smaller figures, illustrative of the Passion and other events of our Lord's life. The tracery at the top of the window is filled by four angels, together with the pelican, the dove, and the lamb; the highest compartment of all being occupied with the Ascension. The window is said to contain between 3,000 and 4,000 pieces of glass, and has 120 figures in it.

DEPRESSION OF THE GLASS TRADE.—At Sunderland, according to the local papers, the glass trade is very much depressed, and 300 glass-men and labourers have been dismissed from Messrs. Hartley and Co.'s extensive establishment. This untoward state of things is said to be occasioned by foreign competition, which is likely at least to lead to a serious reduction of wages if not of work itself.

BUILDING AND BANKRUPTCY.—At the Bankruptcy Court in Basinghall-street, on Wednesday a meeting was held under a fiat sued out against Mr. Stewart, a barrister, and proprietor of the Hippodrome and Norley estates at Notting Hill, in which he had made extensive building improvements. It was now sought to declare him a bankrupt as a builder, dealer, and chapman. Mr. Lawrence appeared to oppose the adjudication, on the ground that a nobleman or gentleman was at full liberty to build on his own estate without being liable to the bankrupt laws. Mr. Stewart had taken the ground on lease for 99 years, and had built for improvements. If it were held that he was liable to be made a bankrupt of, the Marquis of Westminster, the Marquis of Bute, and other noblemen, would also be liable. Mr. Duncan, who appeared in support of the fiat, said the cases were very different. Mr. Stewart was not improving his own freehold, but had taken the ground on a building lease, and, therefore, built for his own profit, and making that profit on the materials, was liable to the bankrupt laws. His Honour said that he was inclined to the opinion that this did not bring the case within the bankrupt laws, for Mr. Stewart had taken a long lease, which it appeared to him gave such an interest as to entitle him to build for the improvement of his property; but as there was some difference of opinion, he would consider the case, and give judgment next Thursday.

THE FALL OF A CHURCH CEILING IN MANCHESTER.—The accident at St. Michael's church, Manchester, has probably been heard of, by this time, by most of our readers. When the ceiling of a church built only 58 years ago tumbles in, to the extent of 50 feet by 12 feet (ceiling, joists, lathing, and plaster), it ought to make persons think of the danger to which they may be every day exposed by bad building, and lead them to discourage it. Mr. Bellhouse and Mr. Shellard, who were deputed to examine into the cause of the accident, attribute it to the decay of some of the timbers which supported the plaster ceiling. We have since heard of the fall of a factory, in the same town, through failure of an iron girder.

ANOTHER PURPOSE FOR THE PYRAMIDS.—The new Governor of Jamaica, Sir Charles Grey, lately created some amusement by asserting at the meeting of the Royal Agricultural Society, "That the pyramids erected by the Egyptians *were intended as immense tanks for supplying and irrigating the surrounding plains with water!*" The astounding doctrine, says our authority, seemed to take the meeting completely by surprise. And well it might; especially those members of it who had seen a sectional view of these extraordinary constructions. It is even more absurd than the theory that they are the granaries erected by Joseph, which was once propounded.

THE ROYAL STABLES AT WINDSOR.—Since the discovery of the dry-rot throughout the extensive boarding around the riding school at the royal mews, at Windsor (the whole of which has recently been entirely removed), it has been found that the wooden divisions of the stalls and other portions of the woodwork in the royal stables are similarly affected. In several of the stables the stalls have been newly constructed, and it is feared, in consequence of the inroads made by the rot, that the whole will have to be removed and undergo a similar process.—*Morning Post.*

THE NEW WORKS AT JERSEY.—The new north pier, says the *Daily Correspondent*, is now in progress. The foundations at the head were laid on Thursday last. The tide receded to a very great distance, as if to enable the workmen to lay two tiers of stones along the line of the works. The time allowed to the contractors for completing their undertaking is five years and eight months, and the cost of the works will be 109,000*l.*, which, with 57,000*l.* paid for the south pier, incidental and contingent expenses, engineer's plans, &c., will amount to about 180,000*l.*

A BAD PRACTITIONER.—Some one has said, that "intemperance is a great architect—it builds gaols, hospitals, lunatic asylums, workhouses, and hulks." It may be added, on the other hand, that it soon knocks down all that a man may have previously built up,—whether it be reputation or houses, and speedily saps the foundation of all that is good,

Projected Works.—In the newspapers of the past week, advertisments were issued for contract-tenders for the whole or any portion of the works necessary to be done in the erection of the Priest's house, Catholic church, Yarmouth; the restoration and reseating of the parish church of Bottesford; the erection of a chapel and school-room at Brentwood; the whole or any portion of the works required in the erection of the south wing of the proposed addition to the Manchester Royal Infirmary; certain works at a house in Bedford; excavating and constructing Southgate-street Dock and works at Gloucester; for the erection of New Kingswood near Bath; of a training school at Carmarthen; the rebuilding of Llandilo Church; the several works to be performed in making a cattle-market at Wolverhampton; the building of 1,155 feet of sewer in Fulham-road; and of 2,125 feet of sewer in Mile-end-road, &c., and arching over 1,059 feet of sewer at Bethnal-green, and 72 feet at St. John's, Wapping; also for the whole works necessary for deepening and improving the drainage of the Pow of Inchaffray, Perthshire, for nine miles; paving in Holborn, Broad-street, and High-street; also for a supply of road materials for the metropolis roads, and of gravel for the Colchester-road trustees; also of cast-iron pipes, sluice cocks, street watering posts, &c. &c., for the Carlisle Water-works; and for the construction of the works on four miles of the Glasgow and Ardrossan, and of portions of the Newcastle and Carlisle Railways; and 1,000 tons of cast-iron chairs for the Manchester, Sheffield, and Lincoln Junction railway; also for the erection of the proposed railway station at Chester.

The Old Grammar School at Ipswich.—At a meeting of the corporation, to consider a proposal for preserving the old Grammar School, a letter from Sir Francis Palgrave was read: it said, "I do hope that the doom of your refectory may be averted. Such an act of Vandalism would be shameful. This is the *only* specimen in England, and so far as I know in France, of a refectory of the Black Friars' preachers, and as each order of monks and friars had its own scheme, its destruction, so foolish, so needless, will be reprobated." The Town-clerk remarked, it would be presumptuous for him to question the authority of Sir Francis Palgrave; but he had before him documents to show that this building never was the refectory of the Black Friars' preachers—that the refectory stood in the Old Grammar School playground, which was between the Grammar School and Foundation-street. "The late Mr. Kirby published twelve prints of old buildings in Suffolk, and amongst these was a view of Christ's Hospital, in Ipswich. It was well known that this building formed part of the buildings occupied by the Black Friars' preachers, as well as the Upper Foundation. The whole of these premises formed the Monastery of the Black Friars' preachers, and they were purchased by the corporation, and appropriated to various uses." A strong feeling prevailed in favour of restoring the building. The Mayor remarked, and we honour him for the feeling, that he, with many of the older inhabitants of the town, had received the last part of his education in the Old Grammar School, and, with the parties to whom he had alluded, he could not but look with veneration upon an edifice associated as it was with so many early associations and pleasing recollections. He hoped, therefore, that with the few alterations required, the building would be allowed to remain untouched. Mr. J. M. Clark, of Ipswich, has made drawings for the restoration.

Competitions.—A premium of 100*l.* is offered for the best, and 50*l.* for the second best plan, &c., for the arrangement of the wharf and works, and the construction of the necessary station, custom-house, and hotel accommodation at Newhaven harbour, on the London, Brighton, and South Coast Railway.—The time for receiving designs for the Sheffield Athenæum and Mechanics' Institute building has been extended to the 14th of May next.

The French Protestant Church, erected a short time ago in Bloomsbury-street, Holborn, narrowly escaped destruction by fire last week. The joists and floor boards were ignited, through some defects in the hot-air flue; but smoke becoming evident during service, the fire was extinguished without doing much damage.

A Builder Sheriff.—Mr. William Cubitt, of the Gray's-Inn Road, is nominated one of the sheriffs of London for the ensuing year. A better choice, we may venture to say, could scarcely have been made. It seems likely, too, that Mr. Cubitt will be returned to Parliament before long.

[Advertisement.]

Particulars of estimate for contracts, for alterations to Mr. Burdett's premises, Wandsworth-road: W. W. Jenkins, Esq., Architect.

Laurence	£637 0
Wilkinson and Son	497 10
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TO CORRESPONDENTS.

"*Sting.*"—The reports of proceedings at the Institute of Architects, which appear in The Builder, are made exclusively for it. Although dated Saturday, our Journal is published early on Friday morning, while the Journal referred to by our correspondent as containing these same reports, without acknowledgment, does not appear till Saturday, so that our pages are available for it, although apparently published at the same time. Our information is at the service of contemporaries; we simply ask an acknowledgment.

"*W. B.*"—The drawing scarcely suits us. It shall be returned, with thanks.

"*C. W. O.*"—We should be glad to see a description of the mode employed.

"*A Word in Season.*"—The mere opinions of an anonymous writer are of course worth nothing.

"*A Subscriber.*"—Thanks: we will endeavour to see it.

"*R. M.*"—No.

"*J. S.*"—We are compelled to decline inserting the letter, after due inquiry.

Received.—"A. N. C." "R. R." "Mr. T." "W. P. G." "W. F." "G. S. T." "W. J. V." "F. D." "J. B." "E. S." (Walworth). "R. M." "Reason." "Archi" shall appear. "A Mason" (Rochester), ditto. "W. H. L." (Darlington), ditto. "An Architect" (Bishopsgate), ditto. "Working Mason" (Leicester), ditto. "The Baronial and Ecclesiastical Antiquities of Scotland," illustrated by R. W. Billings and W. Burn (Blackwood, 37, Paternoster-row). "Memorials of Charterhouse," drawn and lithographed by Mr. C. W. Radcliffe (Moore, Carthusian-street). "The People's Important Guide as to Recovery from Debtors under 20*l.*, in the Local and other Courts," by T. H. Rose (Sherwood and Co.). "The Westminster and Foreign Quarterly, for April," (Luxford, Whitefriars-street).

NOTICE.

THE NEW OPERA HOUSE, COVENT GARDEN.—The next number of The Builder will contain a full account of the construction of the New Opera House, and an elaborate engraving of the interior. Early orders should be given for extra copies.

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THE following are the present Prices, for Cash, of Ironmongery at W. YOUNG, and Co.'s, 194, Oxford-street:—2-inch Cast Butts, 1s. 1d. Doz.; 2½ Do., 1s. 6d. Doz.; 3-inch, 2s. 1d. Doz.; 1½ Iron Sash Pulleys, 7½d. Doz.; 1¾ Do., 1s. 4d. Doz.; 1¾ Brass Do., 2s. 6d.; 1¾ Do., 3s.; Sash Worsted, 3s. 6d. Cwt.; Sash Lines, 6s. 6d. Doz.; 9 Rain Pipe, 1s. 7d. Yard; 5-inch Do., 1s. 10d.; Mortise Locks, 3ls. Doz.

IRONFOUNDRY.
169, Drury-lane, and Charles-street, London.
JOSEPH GLOVER,
(Late HENDRY and GLOVER),
BEGS to inform his Customers, that the PARTNERSHIP between him and WM. HENDRY is DISSOLVED, and that the whole of the business is now solely his; and in consequence of which, he has been enabled to make such arrangements and improvements that they will be insured every advantage in quality, price, and punctuality. The stock of patterns has been re-arranged, to give every facility for selection. A stock of Rain-water Pipes, Heads, Shoes, &c.

TO BUILDERS AND CARPENTERS.
A Considerable saving will be effected in the purchase of IRONMONGERY, by applying at F. B. WILLIAMSON'S Wholesale Warehouse, No. 25, Chiswell-street, Finsbury-square, near Whitbread's Brewery.
Best Patent Cut Clasp.

2d.	4d.	6d.	8d.	10d.	20d.
6d.	7d.	8d.	1s.	1s. 6d.	2s. per 1,000.

Best Sheet Floor Brads 10s. 6d. per cwt.
Best Town Glue 4½. per cwt. Do. Scotch, 52s. per cwt.
Best Patent Sash Line.

1	2	3	4	5	6
4s. 2d.	5s.	6s. 6d.	7s. 6d.	10s.	12s. per gross.

Elliptic Stoves, 2d. per inch. Registers, 6½d., 7d., 8d., per inch.
Self-acting Kitchen Ranges, with Oven and Back Boiler.
Wrought Bars and Bright Fittings.
2 ft., £2. 3s. 3 ft. 6 in., £2. 12s. 6d. 4 ft., £4.
Lists of Prices had on application at the Warehouse; if by letter pre-paid, inclosing postage stamp.

TO ARCHITECTS, BUILDERS, &c.
R. HENLY and Co., WHOLESALE IRONMONGERS, and Manufacturers of KITCHEN-RANGES, STOVES, &c., 196, Blackfriars-road, and 137, Union-street, Borough.
Strong Self-acting Kitchen Ranges, with Back Boiler and Oven, and Wrought Bars:—

2 ft.	2 ft. 3 in.	2 ft. 6 in.	2 ft. 9 in.	4 ft.
£3. 0s.	£3. 12s.	£3. 16s.	£4.	£4. 10s.

Henly's Patent Improved, with back Boiler and Wrought Iron Oven:—

2 ft.	2 ft. 3 in.	2 ft. 6 in.	2 feet 9 in.	4 ft.
£5.	£5. 15s.	£6. 5s.	£6. 10s.	£7.

Best Register Stoves, at 7½., 8d., and 9d. per inch.
Do. Elliptic do. at 8d., 8½d., and 9d. do.
Manufacturer of WOLFE'S PATENT REGISTER STOVES, a certain cure for SMOKY CHIMNEYS, and effecting a great saving in fuel. To be seen in use daily.
Orders from the Country, accompanied with a remittance or reference, will meet with prompt attention.

STOVES, FENDERS, FIRE-IRONS, and KITCHEN RANGES, combining every improvement. A superb choice of Drawing-room and Dining-room Register Stoves. Steel and Bronzed Fenders, Steel Fire-Irons of the most chaste and elegant Patterns, adapted for every taste and station. The Improved Cooking Apparatus, so admired for its simplicity and capabilities, viz.—Roasting, Baking, Boiling, Stewing, Steaming, Boiling, and Frying. This Range will generate sufficient steam, with the aid of pipes, to warm a large dwelling and conservatory; is well deserving the notice of architects and surveyors. To be seen in full operation daily, at DEANE, DRAY, and DEANE'S, the Finsbury Iron Works, 98, Chiswell-street.

CAST-IRON SOCKET-PIPES, RAIN-PIPES, AND EAVES GUTTERS.
F. A. TIDDEMAN, Purfleet Wharf, Earl-street, Blackfriars, keeps a stock of Socket-Pipes, Rain-Pipes, Half-round, and O. G. Gutters, &c. &c. &c. Contracts taken to any extent.

IRON-WORK FOR BAKERS' OVENS.
F. A. TIDDEMAN, Purfleet Wharf, Earl Street, Blackfriars, keeps an assortment of Stocks, or mouth-pieces; Plates, Furnace-bars, Top and Fall Pieces, Stoppers, Chimney-bars, Inside, Outside, and Ash-pit, Doors and Frames, Boilers and Frames, Lamps, &c., &c.; all of the best description, at very moderate prices.—CAST-IRON UPSETS.

TO ARCHITECTS, BUILDERS, AND BRICK-MAKERS.
PUMPS of Superior CONSTRUCTION, bored perfectly true by improved machinery, in various plain and ornamental patterns for Conservatories, Squares, Market Places, Roads, Gardens, and for Liquid Manure. BRICK-MAKERS' PUMPS, in Wrought and Cast Iron. HYDRAULIC LIFT PUMPS, and ENGINES for Wells of any depth. SINGLE and DOUBLE PUMPS up to twelve-inch bore, kept for Hire.
BENJ. FOWLER, 69, Dorset-street, Fleet-street.

TO ARCHITECTS AND BUILDERS.
DOOR SPRINGS AND HINGES.—GERISH'S PATENT DOOR SPRINGS, for CLOSING every description of DOOR, consists of Single and DOUBLE-ACTION BUTT HINGES in Brass and Iron for Doors to open one or both ways, and Rising Hinges for the convenience of Doors opening on uneven Floors. Likewise Swing Centres, which consist of a combination of power unequalled by any made at present.—Manufactured by F. W. GERISH, East-road, City-road; and sold by all respectable Ironmongers in the United Kingdom.

TO ENGINEERS AND BOILER MAKERS.
LAP-WELDED IRON TUBES FOR STEAM BOILERS.
THE BIRMINGHAM PATENT IRON TUBE COMPANY, 43, Cambridge-street, Birmingham, and Smethwick, Staffordshire, manufacture Tubes under an exclusive License from Mr. Richard Prosser, the Patentee. These Tubes are now very extensively used in the Boilers of Marine and Locomotive Steam Engines in England and on the Continent, are stronger, lighter, cheaper, and more durable than Brass or Copper Tubes, and warranted not to open in the Weld. They may be fixed in the Boilers without Ferules, and can be taken out and refixed without additional trouble or expense.—Address, 42, Cambridge-street, Crescent, Birmingham; London Warehouse, 98, Upper Thames street.

CHARLES SMITH and SON, 25, GREAT CHARLES-STREET, BIRMINGHAM (late STANDLY and SMITH, formerly STANDLY and GALE, Bull-street), Locksmiths, Bell-hangers, Brass-founders, Whitesmiths, &c., beg most respectfully to solicit the attention of MAGISTRATES, ARCHITECTS, and ENGINEERS to their inventions for prisons, lunatic asylums, &c.
C. S. and Son will be happy to attend any committee of magistrates without charge, and submit a VARIETY of patterns of peculiar locks, signals, inspection apparatus, chapel door-fastenings, iron frames, hinges, &c., as supplied by them at the MODEL PRISON, LONDON, and TWENTY-THREE SIMILAR GAOLS, where they have given entire satisfaction.
Among other testimonials can be shown that of Major Jebb, attesting the efficiency of the labels, &c., invented by them.
The contracts will be executed to the approval of the inspector-general of prisons, and the architects.
C. Smith and Son also are prepared to contract for the supply of the whole of the ironmongery requisites for the residences of the nobility and gentry, churches, banks, barracks, gaols, asylums, and workhouses, including locks, bells, hinges, grates, kitchen-ranges, staircases, grates, park fencing, fireproof safes, bookcases, doors, metal sashes of all kinds, and every description of ornamental brass and ironwork, light castings, &c.
C. S. and Son beg to refer to the extensive works performed by them at Windsor Castle, Northumberland and Sion House, Blenheim Palace, Chatsworth, &c., as a guarantee for the superiority and durability of their work, in confirmation of which numerous letters from noblemen and gentlemen can be shown.
N.B. C. SMITH and SON do not appropriate inventions or advertisements, nor label locks "Patent, Warranted, Secure," that are neither the one nor the other.

SMOKY CHIMNEYS EFFECTUALLY CURED.
WILSON AND CO.'S
PATENT
VENTILATING CHIMNEY POT,

For the cure of smoky chimneys, has been tested extensively throughout the Kingdom for the last two years, and has proved to be an effectual remedy.
The Patent Pots cannot corrode or get out of order, and can be effectually swept by the sweep's machine.
They are now manufactured of artificial Stone Cement.
The Trade supplied with them at the Manufactory,
VALE PLACE, HAMMERSMITH GATE, MIDDLESEX.
N.B. Licenses granted to Manufacturers.

ARCHITECTS, BUILDERS, and the Trade in general, are informed they can be supplied with Cement and Plaster Ornaments of first-rate quality, consisting of chimney-shafts in the Elizabethan and other styles, pressed balusters, vases, capitals, centre flowers, scrolls, bed mouldings, &c. &c. on the most reasonable terms, by JNO. HERBERT and SON, Modellers, &c., 49, Parker-street, Drury-lane. Modelling executed for the Trade.
A first-rate assortment of shop-front trusses ready for fixing.—Centre flowers fixed complete 25 per cent. cheaper than papier maché.

TO PLASTERERS.
LIME FOR PLASTERING, that may be used immediately without risk of blistering, manufactured expressly for Plastering, and sold at the usual price, at FORBERT'S WHARF, Earl-street, Blackfriars, wharfs for the stacking and mixing of lime. Accommodation for landing and loading bricks, sand, ballast, &c.

TO THE CONSUMERS OF THAMES SAND, AND THE TRADE IN GENERAL.
JOHN DOWNEY, Licensed Lighterman, &c. &c., of 11, Millbank-row, begs most respectfully to inform his customers and friends in the trade, that he has purchased of Mr. WILLIAM COOPER, of Westminster, his two sand-getting craft and business. JOHN DOWNEY, being now owner of four sand barges, can promise a supply of good sand with punctuality and dispatch.

FIRE BRICKS.—WARD & HART, Honduras Wharf, Bankside, Manufacturers and Exporters of every sort of Fire Bricks, Lumps, Tiles, Clay, &c. Builders, Gas Companies, Engineers, Shippers, and all large buyers, supplied from ships from the Manufactories direct, at the lowest prices. A large Stock of every quality always on hand at the Wharf as above. Goods made to pattern at a short notice. Patent Corn Drying Malting Tiles. Lime, Sand, Gravel, Bricks, and Tiles, of every description.

TO BUILDERS.
W. W. RAWLINS, Lime Wharf, King's-road-bridge, Camden New Town, begs respectfully to inform Builders and others, that he continues to supply Grey Stone and Chalk Lime, Blue Lias Lime, Roman Cement, Plaster of Paris, Plasterers' Hair, Thames Ballast, Sand, Tiles, Cement, Chimney-pots, Welch Goods, and all kinds of Building Materials; this being the nearest Lime Wharf to the North of London. Yorkshire Paving Slabs, Sinks, &c.; Thames Ballast and Sand delivered per Barge, in the river, or on any part of the Regent Canal.

CHEAP ROMAN CEMENT is sold in Casks that will not contain Five Bushels, even by some manufacturers of a very respectable name. Consumers should see that the standard size cask is 29 inches long by 17½ across the head, outside measure. Any workman with a rule in his pocket can ascertain this.

PORTLAND CEMENT.—The peculiar property which this Cement possesses, of entirely resisting the action of frost, renders it the only safe Cement to use at this season for exterior work, either in bricklaying or plastering. Satisfactory proof of the fact can be furnished by the manufacturers.—J. B. WHITE and SONS, Millbank-street, Westminster.

KEENE'S PATENT MARBLE CEMENT forms an exceedingly hard and indestructible Stucco, which may either be prepared for paint, or finished in imitation of stone, by the addition of Portland or other stone dust.
It is a cheap and efficient substitute in place of wood for skirting, architrave, and other mouldings, in its application for which purposes it checks the progress of Fire and the attacks of Vermin.
Patentees and sole Manufacturers, J. B. WHITE and SONS, Millbank-street, Westminster, and Seal-street, Liverpool

GREAVES'S BLUE LIAS LIME and CEMENT.—Engineers, Architects, Contractors, &c., are respectfully informed, that the above articles can be supplied by the following agents, viz.—Messrs. Rutty and Varey, No. 2, South Wharf, Paddington; Mr. J. Thompson, back King-street, Manchester; Mr. T. Wylie, 56, Gloucester-street, Liverpool; Mr. J. Harrison, Linen Hall-street, Chester; Mr. J. Benehill, Broad-street, Birmingham; Mr. E. Cryer, Canal Wharf, Oxford; or by R. GREAVES'S boats, direct from the Works, at Southam, Warwickshire.
N.B. Ground Lias Lime for Concrete. Office, Stratford-on-Avon

MARTIN'S FIRE-PROOF AND ORNAMENTAL CEMENT.
CAUTION.—Messrs. STEVENS and SON, Patentees, beg to caution their friends and the trade generally against confounding this invaluable Cement with others, erroneously said to be of the same description. S. and S. pledge themselves that MARTIN'S CEMENT is totally dissimilar in composition and manufacture from every other, and being a neutral compound, is not only free from chemical agency upon any substance with which it may come in contact, but completely resists the action of the strongest acids. They feel it a duty to direct attention to the following properties, which it exclusively possesses:—
1. It rapidly acquires the hardness of stone.
2. Unlike other internal cements, its hardness is uniform throughout its entire thickness.
3. Its surface (which may be made equal to that of the finest marble) NEVER THROWS OUT ANY SALT, and will receive paint in four days, without pealing, when put upon dry work.
It is peculiarly adapted as an internal stucco for walls, skirtings, architraves, mouldings, and enrichments of all kinds, to all of which purposes it has been extensively applied by Mr. Thomas Cubitt, on the Grosvenor estate, &c.
For the above purposes, it possesses great advantages over wood, being more economical and durable, resisting fire, damp, and vermin.
For the floors of halls and fire-proof warehouses, its lightness, durability, and uniform surface give it an immense advantage over stone, being, at the same time, much more economical. The most satisfactory references can be given. To be had of the Patentees, Plaster of Paris and Cement Manufacturers, 199, DRURY LANE.
Agent for Liverpool and Manchester, Mr. R. PART, 38, Cunningplace, Liverpool.

TO ARCHITECTS, ENGINEERS, CONTRACTORS, BUILDERS, MASONS, AND PLASTERERS, MERCHANTS, SHIPPERS, AND THE PUBLIC IN GENERAL.
JOHN'S and CO.'S PATENT STUCCO CEMENT.—The following are the positive advantages possessed by this Invention over every Cement hitherto introduced:—It will effectually resist Damp. It will never vegetate, nor turn green, nor otherwise discolour. It will never crack, blister, nor peel off. It will form a complete Stone casing to any Building covered with it. It so closely resembles Stone that it is impossible to detect it. It never requires either to be painted or coloured. It will keep fresh and good in the cask, in any Climate, for any number of years. It is the only Cement that can be depended upon for export. It is the only Cement that can be used with confidence by the Sea-side. It may be used in the hottest or coldest Climates at any season. It will adhere to any substance, even to Wood, Iron, or Glass. It will carry a larger Proportion of Sand than any other Cement. It matures by age, and becomes perfect when other Cements begin to perish. It may be worked through the Winter, as frost has no effect upon it. It may be used on the Inner Walls of new Houses, which may be papered over or painted directly. Roofs laid or pointed with this Cement will remain undamaged by the severest Storms. Any Plasterer may apply it, the Instructions for use being very clear and distinct. The first cost of this material does not exceed that of the cheapest Cement now in use; but with all the above-named extraordinary and valuable advantages, nothing can approach it in point of economy.
Architects and Builders who have used this Cement have declared that it requires only to be known to be universally preferred.
Specimens may be seen, and a Prospectus fully describing the Cements, and its mode of application, together with a volume of Testimonials from every part of the Kingdom, may be obtained on application at the office of "The Builder," and of MANN and CO., SOLE AGENTS for the Patentees, 5, Maiden-lane, Queen-street, Cheapside, London; of whom also may be had.
JOHN'S and CO.'S PATENT STONE-COLOUR STUCCO PAINT, expressly intended for Painting over exterior Walls of Houses that have been covered with Roman or other Cements, and which have become dirty and discoloured. It is in every way better suited for this purpose than White Lead Paint, which will frequently come off in flakes, being in direct chemical opposition with Cement; whereas MESSRS. JOHN'S and CO.'S PATENT PAINT having an affinity for Stucco, blends itself with it, stopping the cavities, thereby rendering the wall proof against weather, and imparting a pure stone-like effect, producible by no other Paint whatever. It is cheap in its application,—and may be used by any Painter, in any climate, even in the most exposed Marine situations.